

May/June 2001
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Backwoods Home magazine

practical ideas for self-reliant living

Solar Fair

Wild herb tea

A child's garden

Animal births

Build a log crib

Ayoob on Firearms



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DEPARTMENTS

Backwoods Home Magazine is written for people who have a desire to pursue personal independence, self sufficiency, and their dreams. It offers "how to" articles on owner-built housing, independent energy, gardening, health, self-employment, country living, and other topics related to an independent and self-reliant lifestyle.

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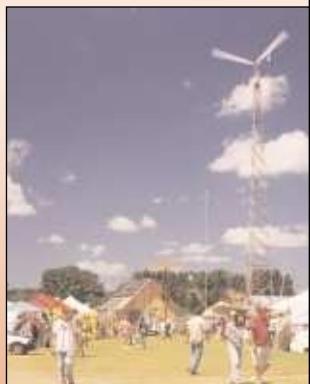
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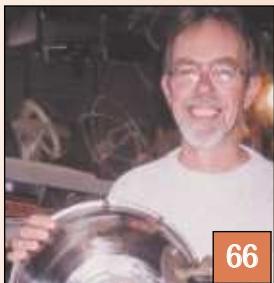
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ABOUT THE COVER

This issue's cover is a copy of a photograph from the 2000 Midwest Renewable Energy and Sustainable Living Fair hosted by the Midwest Renewable Energy Association. This is the Fair's 12th year and it will take place in Amherst, Wisconsin, June 22-24. In 1999, more than 15,000 people from 49 states and 40 countries attended. This year even more are expected. There will also be more than 100 workshops, 125 exhibit booths, site tours, family activities, food, and fun. BHM will be there, too, and we will have our own booth. We hope to see you all there at the Fair.



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Energy Works

64 It's all happening at the fair By Michael Hackleman

Looking for a place to learn about renewable energy and see and touch the hardware? Check out the The Midwest Renewable Energy and Sustainable Living Fair this June in Amherst, Wisconsin.



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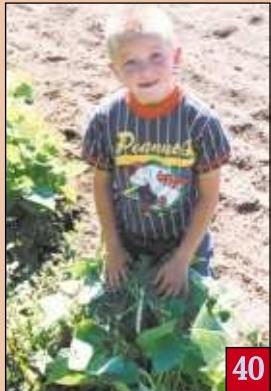
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This is the time of year when many of the animals are giving birth on the farm. Jackie Clay discusses what to expect and how to prepare for and deal with problems.



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Publisher's Note

BHM doubles its subscriber base

Backwoods Home Magazine has signed an agreement with *Self Reliance Journal*, formerly called *American Survival Guide*, to acquire their entire database of 19,000 subscribers. *Self Reliance Journal* has decided to close its doors, and *BHM* has agreed to fulfill their subscribers' subscriptions for up to six issues, beginning with our July/August issue.

This is a very significant step for *BHM*, as it effectively doubles our subscriber database. It also, of course, increases our costs as we must print more magazines, but I'm guessing that a significant percentage of those subscribers will renew with *BHM* once their subscriptions expire.

This database acquisition highlights the continuing growth of *BHM*. In addition to our now 38,000 subscriber database, approximately 25,000 people buy us from the newsstand, and another 86,000 visit our website each month to read our free issue and articles.

We've accomplished this by sticking to our principles, by not compromising one inch in our philosophy of total self-reliance coupled with a political reverence for the U.S. *Constitution*, including our 2nd Amendment rights. It's wonderful to see the readership response to quality articles presented in a non-politically correct setting.

No more price changes

We've gotten a number of complaints from readers upset that we lowered our prices after they bought a product from us at a higher price. So we've settled on a "final" low price in this issue for just about all our products, and we're



The BHM staff

going to stick with these prices. They are about as low as we can cut prices and still stay in business.



My Internet satellite dish worked fine covered with snow.

The Solar Fair

Hope to see some of you at the Midwest Renewable Energy Fair in Amherst, WI, June 22-24. The ad for the fair is on page 77, and we have an article on it on page 64. This is the largest of the energy fairs. I'm looking forward to having a beer with Mick Sagrillo, the driving force behind this fair for years. Michael Hackleman, our Energy Editor, will also be there so you can ask him all the questions you want about alternative energy.

Satellite Internet service

I've installed the Starband satellite Internet system at my house. Download speeds are 12-25 times faster than a 56K modem, and upload speeds are 2-4 times faster. This is the first two-way satellite Internet system, and it is spectacular. It has turned the Internet into an easy-to-access library for me. Cost is \$70 a month, but you can get satellite TV on the same dish.

This is great technology for those who live beyond the reach of telephone service. You need no telephone or internet service provider, just a computer and electricity. Go to www.starband.com for more info.

Dave Duffy Daily

Please check out my column, *Dave Duffy Daily*, on the Internet. It's on the front page of our website: www.backwoodshome.com (also www.self-reliance.com). I think you'll find it very interesting.

BHM "on the road"

I'm taking my family on the road in June with a cross-country promotional tour of the magazine. We'll publish a map at our Internet website (www.backwoodshome.com) to show you our route. We'd like to hook up with as many subscribers and writers as we can on the trip. We'll travel from the Oregon office to the New England office, dispensing the current issue as we go. The Midwest Renewable Energy Fair in Wisconsin will be one of our stops.

I'll give daily updates of our progress in my *Dave Duffy Daily* column at our website. Δ

My view

How environmental ideology hurts the solar energy industry

Starting with our first issue 11 years ago, *Backwoods Home Magazine* has promoted renewable energies, especially solar energy, and for the past two years we have carried a 16-page *Energy Works* section devoted exclusively to these alternative energies.

Why? Because they represent logical choices for those of us who want to live a self-reliant, independent lifestyle, free from dependence on the electrical grid or noisy generators. For several years *BHM* was even produced by a solar electric system.

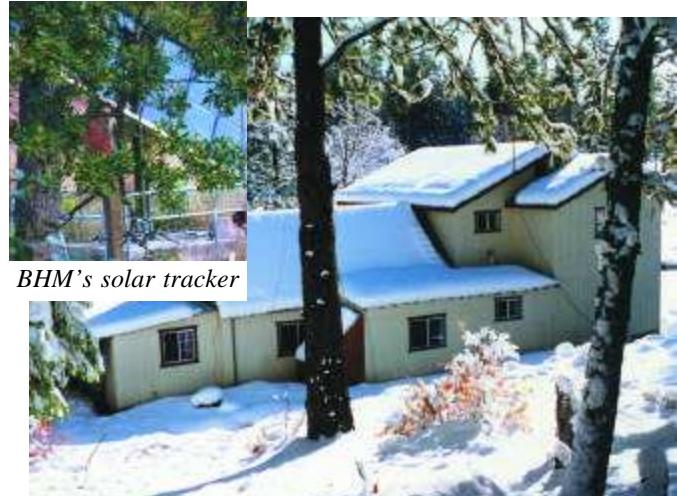
Why then do I feel like I am about to travel into enemy territory because I will soon attend the solar energy industry's two largest events: Solar Forum 2001, which is the annual conference of the American Solar Energy Society (ASES) in Washington, DC, and the Midwest Renewable Energy Fair in Amherst, WI, which is the largest alternative energy fair in the nation.

The reason highlights a major failing of the alternative energy industry, and of the solar industry in particular: I am a political conservative, and these major solar events, and most of the corporations that take part in them, are dominated by liberal environmentalists who insist on parading their ideology in my face and in the faces of my readers.

BHM's readers not only have the use for—and the money to buy—these energy products, but they far outnumber those who buy mainly for environmental reasons. Yet when *BHM*'s readers, who are 90% conservative and libertarian, reach out to buy a solar panel they must endure the drubbing of environmental "save the planet" messages that they view as false or hysterical.

It is to the detriment of the solar industry that this is so. These solar environmentalists, who put their ideological stamp on every news release and pamphlet that emanates from the alternative energy industry, are left over from a day when solar energy was being introduced to the world as a clean, albeit expensive, form of energy that could replace the dirty fossil fuel types of energy most of the world used. They performed a useful service for the industry then, but they are holding it back now from taking its next step into mainstream America, which is *Backwoods Home Magazine's* America.

Let's put aside arguments about the truth or falsehood of the solar industry's environmental message and consider the damage it does to solar acceptance in the rural community. Not only does the message turn many *BHM* readers off and cause them not to buy these energy products, but it perpetuates the myth that solar and other renewable energies can only compete on a "save the planet" basis.



BHM's solar tracker

The former BHM office was solar powered.

In fact, solar and the other renewable energies can compete on economic and value-for-dollar bases, and that's what my readership, and the rest of America, care about. We're not interested in environmental ideology, but in products that can help us live and raise our families. We'll take care of our own environment, thank you, without advice from people who want to take our land to save rats and owls.

In the most recent issue of *Solar Today*, the main house organ of the solar energy industry, nearly all of the articles couple solar with themes about sustainability, global warming, climate change, etc.—the usual buzz phrases about why we should buy solar products. The conference in D.C. and the MREA fair in Amherst will be full of the same nonsense. Conservatives interested in the products have to walk around holding their noses.

Let me give the solar industry a marketing tip: the American rural countryside, which is ideal for home installations of solar energy systems, is populated mainly by conservative people who want to raise their families without crime or government intrusion. We left the liberals back in the cities. That's why Bush won nearly all the rural states, and Gore won all the states with big cities where liberals and environmentalists dominate.

If you want to sell to the rural market, appeal to us. Leave your ideology behind, as it only nauseates us, and we have difficulty reaching for our wallets when nauseated.

Solar is ready for mainstream America, and we are ready for your energy products—if they are affordable and reliable. Especially if they make us more independent. Sell solar to us on that basis.

We are the people who used windmills earlier in this century. We were not buyers of ideology then, and we are not buyers of ideology now. We are buyers of products that can help us live well. It's about time you realized that. △

Animal birthing

By Jackie Clay

One of my favorite times on the homestead is when my animals give birth to their young, usually in May and June. Not only is this the "normal" time Mother Nature picks for most animal births, but the time we usually pick as well. After all, this is the time when the snow is gone, the grass is greening, and the weather takes on a gentle, mild feel.

Not only does this annual regeneration provide beauty and joy, but it also keeps the homestead going. Those adorable lambs will give us an income from sales and wool, the triplet goat kids will be two future milkers for us and our neighbors, plus a weather pack goat for a backpacker.

The litter of pudgy little pigs will be our winter pork, and they will buy feed for the parents through the sale of the rest of the litter. That shiny black and white bull calf will be our year's meat in a couple of years and his birth will let his mother come into milk, giving us all our dairy products for nearly a year. And that long-legged dark Morgan colt will be our 10-year-old son, David's, riding horse in three or four years, to replace his aging mount.

Now all of these homestead births are natural and generally come about with little or no human help. But

before each one we are a bit nervous and watchful, especially those who have not had much experience attending animal births. So let's talk a little bit about how the normal birth progresses.

It is very helpful to have on hand an illustrated book which covers the birth of your homestead animals. Read it. Study it. Have it on hand at the time your mother animals are about to bring their young into the world. It's like a security blanket, a true lifeline. And inside the front cover, tape your veterinarian's business card. In emergencies, it's easier to find than your phone book.

Normal birth

Although there are small differences in homestead animals' birthing, generally most progress in just about the same way. First of all, determine by figuring from the breeding date onward, the approximate delivery



Most homestead births come out fine, but a few need human intervention. You can make the difference between life and death.

date. This is not written in stone, even if you have an exact breeding date. I've seen doe goats go a couple of weeks past their expected delivery date and mares go over a month over, and all managed normally when it came time to give birth. Still, it is helpful to have a target date.

If possible, have a pregnancy examination done by your veterinarian. At this time, he can confirm your approximate date, as well as making sure all seems well with the mother. He or she will also advise you on any vaccinations that are appropriate to protect the dam and young.

As the time of birth draws near, you will notice the mother is growing very broad. Then as her time draws even closer, it seems that her belly drops, hanging heavily from her spine and hip bones. You will notice that her udder is more full and, just before giving birth, it will suddenly "spring," appearing full and shiny with the

Photos, Jackie Clay



Only minutes old and this newborn calf is looking for milk.

teats extended. Sometimes drips of milk will hang on the teat orifice or even drip steadily. Do nothing; this is normal.

When actual labor is very close, you'll probably notice that she seeks seclusion. A sow pig or female dog will usually make a nest to keep her litter cozy and safe. Be sure to have a place ready for her well in advance.

Herd animals will leave the herd and look for a secluded little glen in

which to give birth. While this urge for seclusion is a natural way of protection from both predators and curious herd members, it's best to let the mother be "secluded" in a small private pasture or roomy stall in the barn. This prevents mama from getting into some hidden place where even you can't find her.

When you decide labor is imminent, gather a few supplies you will need to aid the newborn. These

Suggested reading

Veterinary Guide for Animal Owners by C.E. Spaulding and Jackie Clay, Rodale Press, available from *Backwoods Home Magazine*.

include a couple of clean, dry towels, a wide mouth jar (a baby food jar is good) full of iodine, a pair of clean, sterilized scissors, and some white, strong thread.

The first sign you'll probably have when labor starts is a restlessness. She may refuse feed, pace around, then stop and listen as if she hears a faraway sound. Crouching and lying down and getting back up soon follow. Her tail will raise, as if she were about to have a bowel movement, but nothing happens. Her labor has started.

She may lie down and strain a bit, get up, then move off to lie down again. Usually her vulva will bulge and a dark "ball" will appear. This is not the baby, but her "water bag," the membrane which contains amniotic fluid to cushion the baby. As it is expelled, it will rupture, gushing fluid on the ground.

Soon after, the baby's front feet, then nose will appear, as if it were diving into the world. This is when straining begins in earnest. Usually, in only a few minutes, the head and front legs are born and the hind parts quickly follow.

Dry the baby off with a towel, paying special attention to the mouth and nostrils. Sometimes membranes or fluid block them, making it impossible for the baby to draw a breath. Tie off the umbilical cord, if it has not already broken at birth, about three inches (for piglets) to six inches (for calves or foals) from the baby's body, then cut the cord on the "mother" side of the string. Then dip the cord stump into the iodine. This prevents many potential infections.

Then introduce the baby to its mother and repeat the above for any



Photo: Raina Blackman

*If the baby is born weak and doesn't want to nurse, you must warm it.
Hypothermia can kill a baby animal in hours.*

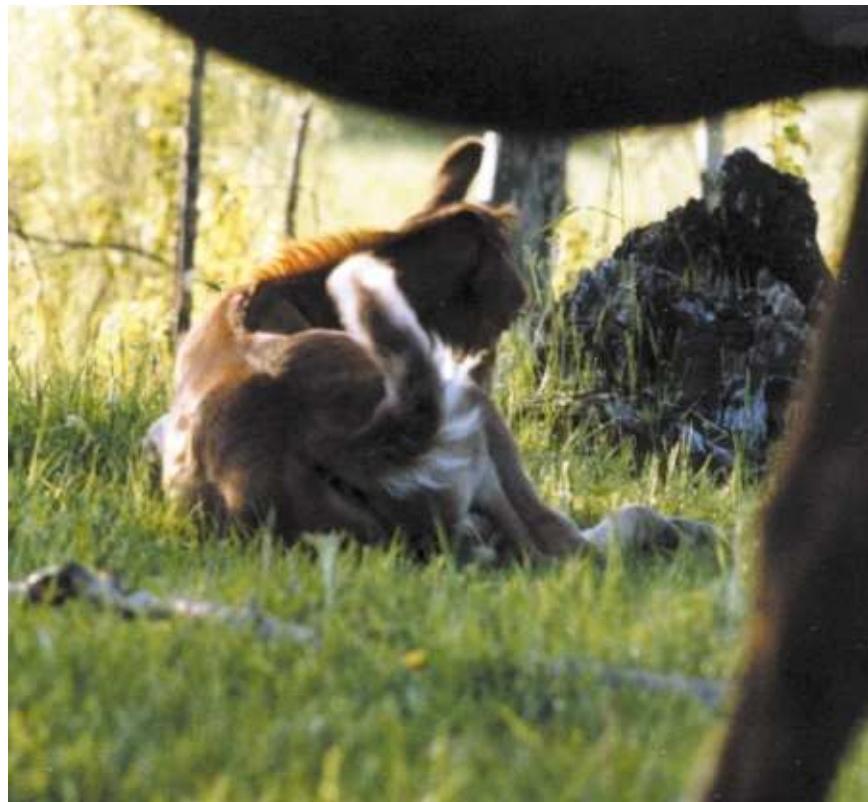
multiple birth mothers (sheep, goat, pig, dog, cat). Be sure that the baby(s) are able and willing to suck, filling up briefly on the mother's first milk. This thick first milk, called colostrum, provides more than nutrition. It also provides the baby with natural immunity to many diseases as

that provides additional, gentle, safe heat to raise the baby's body tempera-

ture to normal for his species. Just covering the baby with a blanket is not enough. Hypothermia can kill a baby animal in hours.

Besides warmth, that weak baby needs warm mother's milk, even if it will not suck. *Do not* force feed by pouring milk down him, even with an eye dropper. Have your veterinarian or an experienced animal person show you how to tube feed the baby. It is quite easily learned. You can't really mess up if you're careful. And usually one or two tube feedings is all that newborn needs to get him up and going strong.

Be sure that all baby animals bond with their mother. Sometimes this is a little difficult, especially with that weak baby you have to warm or tube feed. But usually if you get a helper to restrain the mother so she doesn't kick, step on, or knock the baby down, you can help it learn to nurse. And once the baby is nursing strong-



A new foal takes a rest. Soon he will be hopping, skipping, and jumping across the new green grass.

well as many special nutrients. It also acts as a laxative to help expel the dark, first stools.

If the baby is born weak and doesn't want to nurse, you must warm it. Use heat lamps, a special nursery box with heat, or any way

ly, the mother will sniff and lick her newborn happily.

Don't worry if the baby's feet seem deformed, having some soft "white stuff" hanging from them. This is only the padding that protects the uterus before birth, and the birth canal during delivery. The feet will appear "normal" in a day's time.

Something goes wrong

Ninety nine out of a hundred births go smoothly, without human help. But on occasion, something complicates this process. Usually it is only that the newborn-to-be is a little too large to pass easily through the birth canal. This is most often seen in first time mothers. This is why it is best to breed the female to a male who throws small birthweight babies the first time.

If the mother is straining for over an hour, producing nothing, or nothing but her water bag or the baby's feet, it is a good idea to check. You don't need surgical gloves. But you should trim any long nails and scrub your hands well with soap and water. Then soap up your bare hand and forearm with dish soap. Remember that the most common birth position is a "diving" pose, with front feet coming out, toes down, with the nose between the front legs. First, look at the toes, to make sure they are pointed down....if not the baby may be coming backwards. Then slip your hand in the vagina, feeling for the nose. If the head is right there, you may only need to pull on the front legs with your hands, as the mother strains, to help deliver the baby. Sometimes, with a quite large baby, you will need to pull very hard, using a downward pull toward the ground or the mother's hind feet.

There is a special "jack" to help pull extremely large calves or colts, as bare human strength is sometimes not enough to get the job done. As it is fairly expensive, a fetal extractor is not a piece of homestead equipment

if you only have one mare or a couple of cows. Call your veterinarian rather than cobbling the job with a come along or pickup truck. The fetal extractor pulls the baby, at just the right angle, and it also pushes against the mother's buttocks.

If the head is there, but not between the forelegs, position it correctly, then pull gently.

If you cannot feel the head, or the neck bends to one side, you can often shove the forelegs back into the birth canal with one hand while pulling the head up into the pelvic outlet with the other. If you can't get it into position in a few minutes, call your veterinarian. The baby cannot be born in this position and both mother and baby will be in serious trouble soon.

Sometimes the baby is trying to be born with one front leg and the head coming through the birth canal. The other one has been deflected on the brim of the pelvis and is hanging up outside the birth canal. As above, the baby cannot be born in this position. Usually, you can reach in and grasp the leg, and by pushing the baby back in a bit you can slip the leg into the birth canal and arrange it into the correct position. Again, if you can't get it, call the veterinarian at once.

The other "normal" but less common position for birth is the rear presentation, with the hind legs coming first, followed by the buttocks and body. Contrary to popular belief, this is not an emergency. Actually, it is usually pretty easy for the baby to be born in this position, as the body forms a wedge shape, stretching the birth canal for the body. The only problem is that once the umbilical cord breaks the baby starts to breathe and the head is often still in the birth canal, wrapped in placenta.

To help this delivery, you must often help by pulling firmly as the mother strains, supporting the baby if the mother is still standing. It is a long way from birth canal to the ground in some animals, and the head

is quite tender. In a front presentation, the forelegs and head slide to the ground first, but in the rear presentation, the head often drops like a stone. Guard against that.

Just as soon as the baby is born, be absolutely sure to clear out the nasal passages and mouth. Sometimes you must hold the baby up by his hind legs to drain mucus and blow into the mouth with the nostrils held closed. Blow gently to just fill the lungs, then let them empty naturally. Usually, only a breath or two is needed to jump start a baby who is not breathing.

When you feel you need help, call your veterinarian. Some births are very difficult, requiring the skill of an experienced person. Know when you've reached the limit of your skill without endangering your struggling mother animal.

Should your baby animals be born in very cold weather, make sure they are completely dried off in a short time. Provide heat in the form of heat lamps for small baby animals such as piglets, kids, and lambs. Be sure, though, that the lamp is not too close to the baby, and it is secured extremely well and out of reach of the mother. You don't want a fire. With larger animal babies, just providing a stall out of the weather with dry, deep bedding is enough protection in even very cold climates.

Enjoy your springtime homestead animal births with confidence. Soon your little babies will be hopping, skipping, and jumping across the new green grass bringing giggles to your children and grandchildren. Life has renewed itself once again. And it really wasn't that difficult, was it? Δ

To read more articles by
Jackie Clay,
 go to our website:
www.backwoodshome.com

Foraging for a fine cup of wild herb tea

By Linda Gabris
Illustrations By Lana Gabris

Tea has gained much recognition lately as one of the healthier brews available to indulge in. Some even say it will become the drink of the new millennium. And the best news is there's a huge variety of wild plants growing across North America that make satisfying tea alternatives to standard black tea.

Herbal teas have always been my favorite "cuppa." Aside from the medicinal properties of the herb teas I've come to rely upon, their scattered locations allow me to take a walk on the wild side.

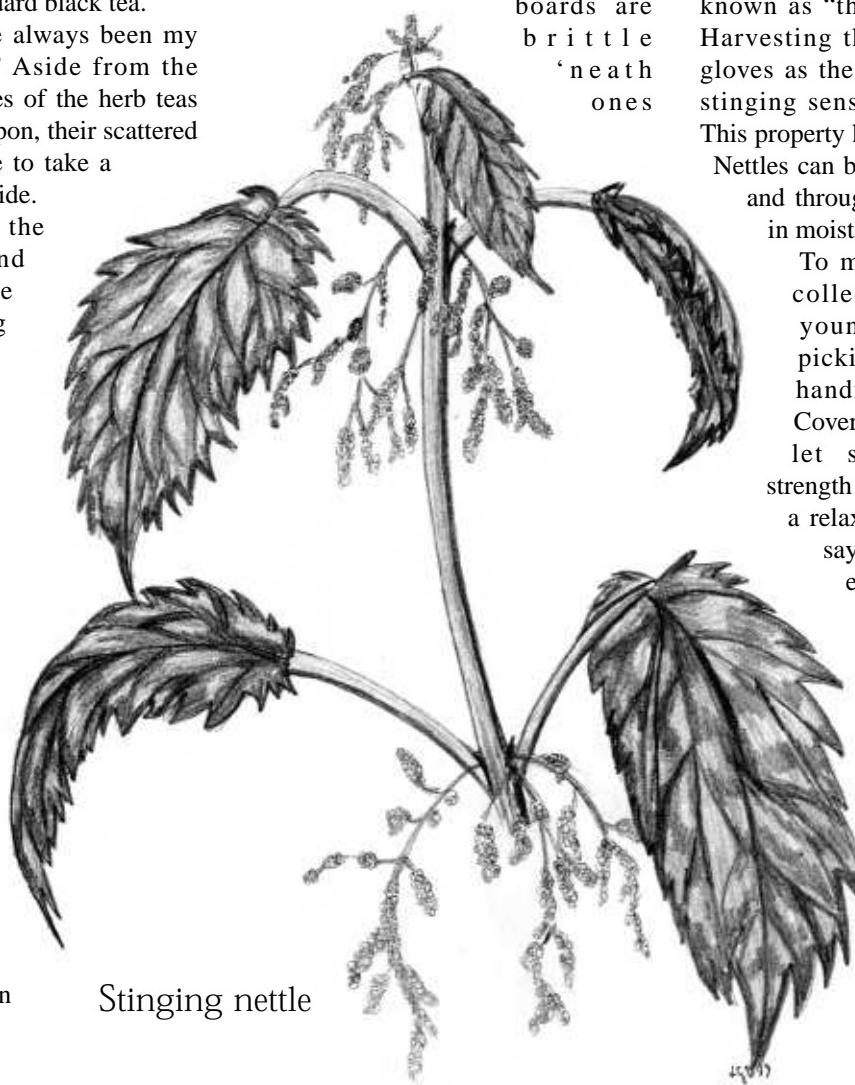
I can go out into the countryside and spend an enjoyable afternoon collecting my favorite varieties—free for the picking.

Can you imagine anything more fulfilling than strolling through the woods on a dew-washed morning or spending a summer afternoon in a flowered meadow in pursuit of one of nature's finest offerings? There is such an abundance of serenity in

the woodlands that you'll want to preserve some of that warmth and tranquility for long winter days ahead.

Many foragers have discovered that sun drenched greenery can be captured and savored all year round. On bleak winter mornings when the window panes are laced with frost and

the floor
boards are
brittle
‘neath
ones



feet, nothing warms the soul more than a piping-hot cup of nettle tea. One sip of this tonic can fill you with reminiscences of milder seasons—smells of earth, damp and fertile.

Stinging nettle

The botanical name of nettle is *Urtica dioica* from *uro* which means "to burn," thus nettles are commonly known as "the devils handshake." Harvesting the plant will require gloves as the bristly fuzz causes a stinging sensation when touched. This property helps identify the plant. Nettles can be found in early spring and throughout summer growing in moist, wooded areas.

To make fresh nettle tea, collect the leaves from young plants. Wash the pickings and drop a scant handful into warmed pot. Cover with boiling water and let steep until desired strength is reached. This makes a relaxing drink which some say acts as a blood purifier and kidney tonic. I find it offers soothing relief for sore throats and is pleasantly calming for headaches. In the olden days nettle tea was brewed in various strengths and administered for everything from gout to clearing

phlegm from the lungs.

Nettle leaves are easy to dry. Just spread washed leaves between sheets of paper

towels and let dry in an airy place until all moisture is absorbed. Crush and store in a tightly capped tin.

Dandelion root

If Java is your morning thing, a suitable coffee substitute can be rendered from dandelion roots.

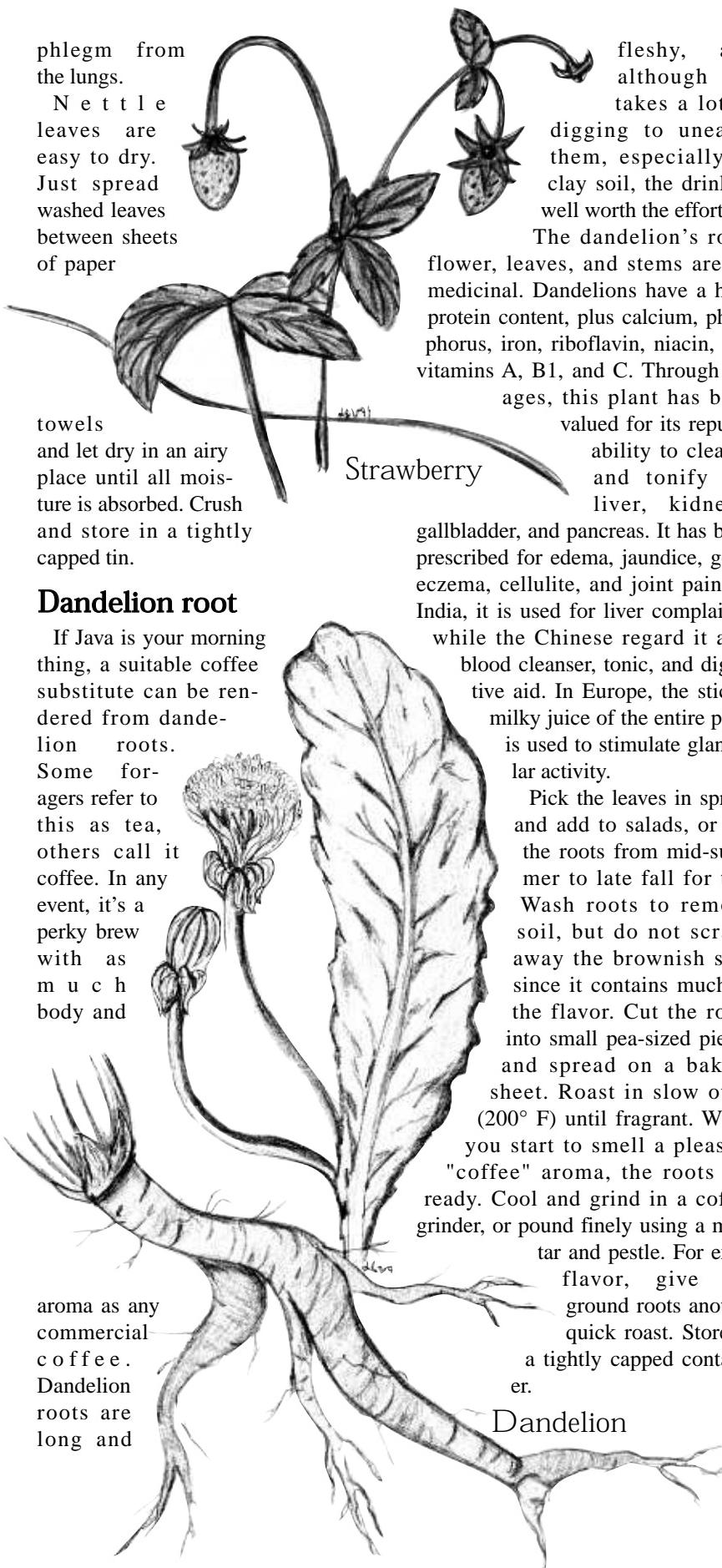
Some foragers refer to this as tea, others call it coffee. In any event, it's a perky brew with as much body and

aroma as any commercial coffee. Dandelion roots are long and

Just as with regular coffee, you can experiment to find the proportions to suit your taste. Start with one tablespoon dandelion coffee to one cup of fresh water and adjust from there. I find that the old "boil it up" method yields the most flavorful brew. This method calls for the coffee to be added directly to a pot of cold water and brought to a slow boil. Then the heat is reduced and the grinds are simmered until the desired strength is reached. Allow grinds to settle to the bottom before pouring. Make your own personalized blends by storing a few cinnamon sticks, vanilla beans, whole cloves, or anything else that tickles your fancy in the containers with the coffee.

Fireweed (Purple Loose strife)

Another plant considered a nuisance weed, but appreciated by foragers, is fireweed. It is a common, easy-to-identify plant that makes a refreshing tea. Fireweed grows in abundance in old logged-out regions, open forests, and damp areas. It is a tall plant with purple flowers which grow in clusters. The tea from fireweed is similar to green tea from China, both in fragrance and flavor. It makes a pale, greenish brew which is very pleasant. The leaves of the fireweed can be gathered all summer long and steeped fresh or dried for



winter use. Aboriginal tribes and early settlers used fireweed as a deterrent for diarrhea. I have tested the tea for this "trouble-some

"bug" and it does work wonders.

Raspberry

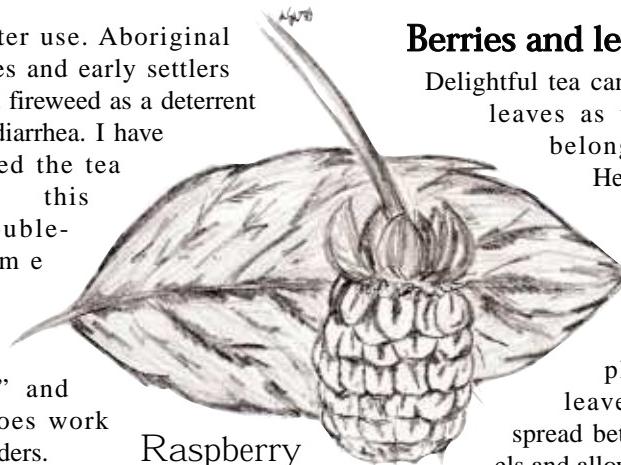
Red clover

Fragrant clover tea has been used for ages to calm anxieties and lift spirits. Choose a sunny day to gather clover flowers.

After washing and drying, spread the flowers on cardboard or sheets of paper or cloth, and let dry in a warm place for a week, or until moisture is gone. Store whole in paper bags. Since this lime colored tea is very aromatic and flavorful, you'll find that smaller measures produce the perfect brew. I find that a cup of clover tea can take the buzz out of a hectic day.

Red clover is most frequently used as animal fodder, but current research shows it contains phytoestrogens, and is generally used as a diuretic and blood tonic.

When the blossoms appear they can be plucked and used in a salad, while a tablespoon of the dried tops can be steeped in a cup of hot water for 10-15 minutes, to which honey can be added once the drink is strained. Alternatively, brew a batch using a tablespoon of herb for each cup of water and serve it hot or cold.



Berries and leaves

Delightful tea can be made out of leaves as well as berries belonging to the Heather family such as blueberry, huckleberry, and bilberry plants. The leaves can be spread between paper towels and allowed to dry. To dry berries, spread on a baking sheet and let dry in a slow oven (200° F) with the door left slightly ajar to allow steam to escape. Berries are done when they resemble dried currants.

The dried berries can be steeped along with the leaves for a more pronounced flavor, or they can be used in place of currants or raisins in

a n y

recipe.

A wedge of orange complements the flavor of berry tea. They make nice summer drinks when served on ice.

W i l d strawberry and raspberry

leaves and fruit, and blackberry leaves make wonderful, full-flavored teas. Raspberry leaves reputedly make an excellent uterine tonic and so are indicated for female reproductive problems and pregnancy. They can be picked all season long and brewed fresh or dried. Berry teas are fun to mix into great tutti-frutti flavors. Dry leaves between sheets of paper tow-

els. Dry the berries in oven or on screens. Steep the leaves alone, or add a few berries per pot for a truly delightful tea. They are also refreshing served over ice.

Rose hips

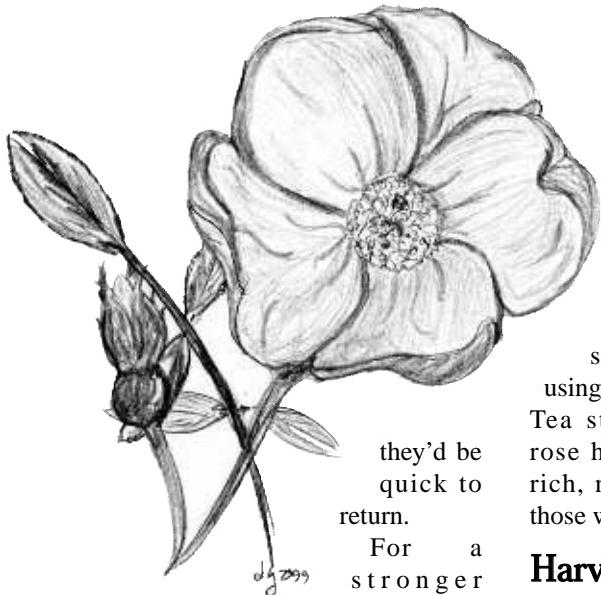
Wild rose tea enjoys a reputation for being the most romantic and delicate of all the woodland offerings. To make this sweetly scented tea, pick the petals and dry until moisture is absorbed. Break up loosely and store. For a darker, stronger tea pick some leaves, too. Rose petal tea is reportedly effective in settling

Blackberry

a n upset stomach. It is also believed to fill the sipper's heart with love. My grandmother always predicted that if you served rose tea to a visitor,



Blueberry



Wild rose

they'd be quick to return.

For a stronger and more nourishing tea,

collect rose fruit late in the fall when it is fully ripe. Gather the hips when they are deep red. The seeds inside the hips have tiny bristles which can irritate skin, mouth and throat so with a gloved finger, break open the hips and thumb out the seeds and discard. Many gardens are adorned with graceful patches of wild rose so you may wish to save a few seeds for planting. They are lovely when cultivated.

Dry the fleshy hips either in a slow oven or on screens in an airy place.

Then, put in a paper bag and break into small pieces using a rolling pin. Tea steeped from rose hips makes a rich, nourishing drink to serve to those who are bedridden with the flu.

Harvesting and storing

Harvest all plants away from roadsides where they are less likely to have been sprayed with pesticides. And remember that it is best to store tea in tightly lidded tins as the color can fade in sealers. Experiment with proportions, keeping in mind that herbal teas can usually be made from the same measures as regular store-bought loose tea. Little packets of teas from the wilderness make wonderful, affordable presents. I've had many compliments on my hand-picked gifts.

If you are new at foraging, start with plants that you are familiar with



Rose hips

and *never harvest a plant that you cannot positively identify*. Lastly, never strip an area. Try to space as you pick.

Foraging is an outing that can be enjoyed by folks of all ages, so don't forget to arm your loved ones with baskets on your next trip into the field. Collecting natural teas is a rewarding pastime which will reap many pleasures all year-round.

(Linda Gabris is a freelance writer living in British Columbia, with life-long experience as an accomplished forager.)△

Grandmother's directions for a perfect cup of tea

Bring fresh drawn well water to a rolling boil. Scald an earthen tea pot, dry, then measure in the leaves while the pot is still warm. Pour boiling water over the leaves. Cover and steep until desired strength is reached. My grandmother always said that "a good cup of tea should be served in a good cup."



Build your own laser level

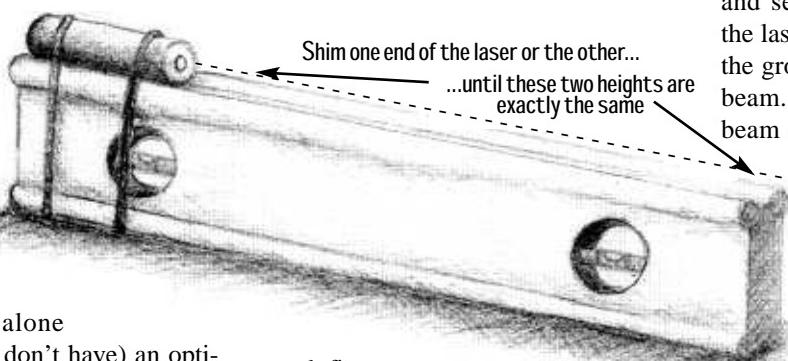
By Harry McCarty

As a carpenter, I own a lot of tools. As a tightwad I hate to buy one when the use won't justify the cost. Recently, while laying out the foundation for a berm house, I made a low-buck version of a useful but pricey tool, a laser level.

A laser level is basically an ordinary spirit level with a laser unit that shoots a beam parallel with the level. It's especially handy when you're working alone and can't use (or don't have) an optical builder's level or transit. In use, you level the tool using the bubble, fasten it in place, turn on the laser and measure at any point along the

beam. It's fast and easy, but the price! I decided to make my own.

Eight dollars bought a novelty laser pointer complete with batteries. Two rubber bands hold the pointer securely to one end of a six-foot level with the beam shooting along the edge toward the opposite end. Four foot levels are more common and will



work fine, but the longer the level the better.

I aligned the beam with the level by comparing the height of the beam just in front of the pointer with the height

at the far end. Careful measurement is the key. Any inaccuracy will be multiplied further down the beam. I shimmed one end of the pointer with strips of paper until both measurements were identical. One more rubber band held down the button to keep the beam on.

To measure my grade elevations, I clamped the tool loosely in a portable workbench, leveled it with the bubble and secured it in place. I turned on the laser and measured the distance to the ground at several points along the beam. Sixty or seventy feet out, the beam spreads to about three inches, but you can eyeball the center of it to about $\frac{1}{4}$ ", close enough for shooting grades.

Indoors, a four-foot version on a lazy susan will mark a level reference line all around a room to set chair rail, suspended ceilings, etc. When you're done with the level, the pointer is still handy for its intended purpose—driving the cat bananas. Δ

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Ask Jackie

Hazelnuts, affordable places to live, market gardening, water systems, baked beans, sauerkraut, and more

(Jackie Clay invites *BHM* readers to submit questions on any facet of low-tech, self-reliant living. Send questions to *BHM*, P.O. Box 712, Gold Beach, OR 97444. E-mail: jackie@backwoodshome.com)

How do I know when hazelnuts are ready for picking and eating? Last year just before the cold weather I picked them but they were still green and never did change.

Lynda Jones
jones.ml@telus.net

Hazelnuts are usually ready just after the cold weather hits. The leaves will be brown and the husks too. Watch the squirrels carefully. They know and will denude a shrub in a day's time. I lost a few hazelnut harvests to the little buggers.

Inside the husks, the nut will be brown and shiny. They may taste green if they are not roasted before eating, or at least sun-dried by laying them on a canvas on a sunny porch rooftop (take them in at night) for a few days, out of the husks, but still in the shell. Watch for birds and squirrels, though.

— Jackie

My husband and I just finished reading your article on your remote backwoods home. It was encouraging to find that it is still possible to find affordable places out there. We have been looking for three years and have been greatly discouraged by the price. We continue to look, but do get discouraged as the prices out west seem outrageous to us. We love cold

and lots of snow. Any suggestions of places like yours that we could get leads on? Alaska is still in the running for us, but I would prefer to be in the lower 48 at this time.

Tim and Jan Leightner
tpljal42@juno.com

There are places out there, but as you found, it takes a lot of looking. Right now, we are again looking. You see, after not being allowed into Canada to our new homestead in British Columbia last year, we settled for our 20-acre homestead here near Wolf Creek, Montana, because we love Montana and we needed something right then. But even though our place is *real backwoods*, requiring 4x4 in the winter, and being way up in the mountains, it isn't enough wilderness for us. Some folks would be tickled pink with our location: no neighbors in sight, deer on the deck, birds that light on your shoulder, mountain views out every huge window in every room in the house, only 15 minutes above the best stretch of Missouri River trout in Montana, etc. But we long for true wilderness, and that's not something you can just put away and forget. Wilderness calls to us every moment, waking or sleeping with an ache that is unbelievable.

So where is there any wilderness left? It's disappearing fast, even in Alaska. We about gave up on Alaska, as we couldn't find another *wild* place for sale that was also a potential self-reliant homestead.



Jackie Clay

There are patches of wilderness left in extreme northeastern Minnesota, northern Wisconsin, and the upper peninsula of Michigan, as well as scattered parts of Maine and Vermont. There are a few private patches of wilderness left in Montana, Wyoming, and Washington state, but as you found out, most are in subdivisions or are not candidates for a self-reliant homestead, usually being very mountainous and having no pasture for livestock or water available. There is *no* legal type of government land available for homesteading in the U.S., no matter what some ad scams indicate.

We will be going back to northern Minnesota, where we can buy a large chunk of very remote (as in no vehicle winter access, no phone, no power, no neighbors anywhere) land where we can both be immersed in the wilderness lifestyle we need to survive, emotionally, and build a self-reliant homestead.

To answer your question, we would need to know your definition of wilderness. A lot of folks call our present homestead wilderness, as we are off grid, live on a rough back road, have no nearby neighbors. And those who are around are definite

backwoods home types. But we feel it is far from that and truly miss the total isolation that a true wilderness provides us. We love people, but need to feel the land breathe about us, have the wildlife move about us in trust and being one with us.

If you're willing to be snowed in for six months out of the year, have no phone, no power, no visitors all winter, be willing to put up with temperatures of -50 degrees or worse, having snow measured in feet instead of inches, and having a growing season of 90 days, you might consider northern Minnesota. If you don't want wilderness that wild, our place in Montana is for sale. Check out the ad in the real estate section of this issue. Good luck in your search. — Jackie

I read with interest your response to Kathryn where you briefly mentioned market gardening as a way to make extra money. My husband and I recently bought a house on 40 acres, on a river, with a huge existing garden. The garden space is at least 4 times as big as anything we've gardened before, and much larger than we need to feed just the two of us. We've been talking for years about some day being able to cut down on the number of hours each of us works outside the home and make money through our own enterprise. I've thought often about starting a greenhouse, but my husband brought up the idea of a market garden.

I'm wondering if you have any tips for how to get started on this. I know there's a local farmer's market in town twice a week. I thought I'd check there this summer to see what sells well and for how much. We're thinking of putting in more fruit; there are already raspberries, and we're going to put in strawberries. In your experience, what sells well? Also, do you know how to get certified to sell "organic" produce? We garden organically, but I think there's some type of certification process you

have to go through in order to claim that your produce is organic.

The only problem we have with the new garden space is that there seems to be no easy way to get water to it. It is several hundred yards and across a dirt road from our house. There is a river within about 50 yards, but it's down a hill and some rough going. I'd like a labor-easy way to water the garden when rain isn't enough. I believe the previous owners used some kind of pump to pump water from the river into a stock tank, but then they watered by hand from the tank. My back hurts just thinking about that. There's got to be an easier way, but we are stumped.

Thanks for any help you can give us to start us on our endeavor. This summer we plan to concentrate on the vegetable garden. Next year on to some other crops and eventually we want to fence in part of the property for various animals. The possibilities are boundless.

Carmen Griggs
carmen@gydestar.com

Beginning a homestead is a lot of work, but it's so much fun, too. You're started off on the right track, doing one thing at a time and checking out the possibilities. A lot of folks get discouraged by trying to do everything at once when they buy a country place. Experience makes things run relatively smoothly, but there are always things you can't control. However, jumping in over your head is a death wish I hate to see folks make.

We started out with a 16 by 8-foot plastic lean-to greenhouse attached to the house, raising our starter plants for about half an acre of market garden. This quickly got us into "the greenhouse business," as I grew more than I could plant and sold the extras to a local general store and neighbors. (When you grow your own, you can be very picky about the varieties you grow, not just rely on supermarket

sales that are often same-old, boring, and often inappropriate for your growing season.)

I ended up with a 42 by 16-foot log-and-glass wood-heated greenhouse and about three acres of market garden, plus our own large house garden. It was great and provided a decent income, lots of new friends, but was a lot of work. (What isn't and is still worthwhile?) This greenhouse not only allowed me to sell at local stores, but truck some to town on Saturday mornings to sell off the tailgate to townsfolk. I also advertised and sold from home.

You don't have to start with a big hoop house, costing thousands. You can start with a smaller plastic & scrap wood greenhouse and get your feet wet for less than \$50.

I did much better with raspberries than strawberries as a market crop because strawberries are very labor intensive and sensitive to conditions. If it is too damp you'll have trouble with mold and fungus. If it is nice, you'll fight grass and weeds, despite mulch. (I'm talking about *big* strawberry beds, not home patches.)

Raspberries always sell out very quickly, for premium prices, and my bad back likes picking upright canes much better than creeping through strawberry beds at 4 a.m.

Blackberries and black raspberries (same deal) sell very well. Likewise, blueberries sell well and are relatively labor-easy.

We had over 1,000 asparagus plants and they produced and sold well.

As for "traditional" varieties, good sweet corn, nice tomatoes, peppers, carrots, onions, broccoli, cabbage, and "gourmet" veggies such as herbs, baby carrots, tiny beets, and salad greens were our best constant sellers. I also sold many, many cut flowers, decorative crops, and pumpkins and squash in season.

Different regions have different certification requirements for organic produce. Truthfully, I never bothered.

I just added a note to our price list: "We garden organically; come see us!" Also mention this to neighbors and buyers. I sold my produce at comparable prices to other sellers. I just let it be known that we believe wholeheartedly in organic gardening and was glad to teach others. Our produce always sold very well without official certification.

As for your water problem, there are several alternatives so you'll have to pick the one that suits you best. You could pump water out of the river with a gasoline water pump, then run a hose to the garden where you would use power sprinklers or a drip system to disperse it.

You might also check out a hydraulic ram pump, which is powered by the water itself. It will pump water from the river up into a holding tank on a platform (a stock tank, for instance). From there you might be able to run a drip system, using gravity flow.

If this doesn't do the trick, you could either use a 12-volt in-line pump for a little extra boost in pressure, run from a deep-cycle battery which you would periodically charge at home, as needed. A small solar panel would also charge the battery in the field.

If all else fails, you could mount a tank in a pickup and haul water from home to the field and use a gasoline pump to pressure sprinkling systems. It depends on the size of the garden. This system is a pain in the whatcham'callit if your garden is over $\frac{1}{2}$ an acre and it gets dry.

Minnesota is pretty generous with irrigation of small plots from rivers, but it would pay to check it out discreetly before hanging all your hopes and plans on the river irrigation.

As a last thought, could you develop a new garden plot closer to the house and outbuildings so that water would be easier? Just a thought...

— Jackie

I noticed the beautiful basket you're holding in the photo and wondered if you made it or purchased it. I would love to learn how to make useful baskets.

Carmen Black
carmen@zoomnet.net

I can not tell a lie, Carmen; I bought that basket. But I've made them, too. If baskets call to you, please give them a try. They are like most everything else; they can be as easy or difficult as you wish. I can whip out a willow basket in an hour that will work. But it is a lot "rustic." (I've been out in the woods and stumbled upon a great mushroom patch and it was either take off my shirt and fill that up or make a basket. I just thought any other woodspeople might rather see me carrying a basket.)

You can make a basket out of so many materials. Any flexible, thin branches (straight is good), vines, slats, natural fibers, such as yucca, cattail leaves, long pine needles, bear grass or even old hemp rope woven on willow shoots.

Go to the library and check out a book on basket making (you may have to get an interlibrary loan) and have at it.

— Jackie

How do you make your home storage beans taste good? I went to a cannery that the Mormon Church has. I put up a lot of home storage food. Yesterday I opened a can of beans and put them in the crock pot for 24 hours. They taste hardly done, and bland. I added salt, pepper, garlic and onions. Any help would be wonderful.

Dave Carlson
pepsi@erols.com

I am assuming your beans were dry beans, sealed in cans. I don't know what type of beans you are cooking. They all taste different. I also don't know what your likes and dislikes are, but I'll give it a try.

First off, most home storage beans are navies or a type of small white bean. When using those, first soak them overnight in fresh water. This softens them some. Then pour off this water and pick out any bad beans or bits of vine. We like them baked in a barbecue sauce. I can several different kinds. You might like them this way.

Baked barbecue beans:

2 cups dried beans
1 tsp. baking soda
$\frac{1}{4}$ lb. chopped ham or other smoked meat
1 cup barbecue sauce
$\frac{1}{2}$ tsp. salt
dash black pepper
1 Tbsp. molasses
1 medium onion, chopped

Soak the beans overnight, adding a little baking soda to the water. In the morning, cook them gently until the skins begin to break. (I pick up a few on a spoon and blow on them gently. If the skins break, they are ready.) Drain off the water, saving one cup. Empty the beans into a baking dish, bury the meat and onions in them and pour the cup of water saved over them. Sprinkle with salt and pepper, and drizzle molasses and half the barbecue sauce over the beans. Cover and bake in a slow oven (about 300 degrees) for four or five hours (or until tender) adding a little water, as needed, to keep them from drying out. When beans are done, add the rest of the barbecue sauce to the top of the beans and return to oven until your mouth waters.

You can experiment a lot with beans. The one thing that remains constant is to soak them overnight and cook them gently until tender. Beans cannot be hurried much. You can start in the morning and bring the beans to a boil and let stand in the hot water for two hours, then drain and cook as above, but some beans

cooked this way will still take lots of slow cooking to soften them.

I home can a lot of beans for the simple reason that so much of my cooking is done in a hurry and you can dump out a quart of canned beans (which are tender) and other ingredients, and be eating in half an hour. Most canning books have recipes for canning dry beans.

— Jackie

Could you tell me a little more about your water supply system. What kind of tank, how was it piped and pumped to the house, and any other information would be helpful.

Melody Burton
lickinghillbillys@hotmail.com

I love unique water systems and I've seen a lot of them. Ours is basically a 400-gallon poly tank, which is buried in the ground on a hill above our house. This prevents it from freezing in the winter. It also provides gravity flow to the house, requiring no pump to give us gentle water pressure for a flush toilet, bath tub, sinks, hot water tank, etc. There is a 1½-inch plastic water pipe from the tank, running seven feet underground to the house plumbing.

In normal years, there is a line running from a spring uphill from the house, into the tank, giving us plenty of energy-free water. But last year was the driest in 100 years in Montana, and the spring (and hundreds of others) went dry. So we haul water from town, in the back of our pickup truck, in a 200-gallon poly tank. This is easily dumped into our buried tank. By conserving, we use less than 400 gallons a week without being miserly about it. This means two trips a week (at worst) to town for water.

Because we almost always carry the empty, lightweight tank in the truck, and we usually end up going to town several times a week, anyway to get supplies or conduct other business,

we simply fill the tank on those trips and bring the water home.

As our water table during the drought is only about 120 feet down, a well will be quite inexpensive to put in. And, of course, with the snow we're getting this winter, we expect the spring to be running well come warm weather.

— Jackie

You talked about pumpkin uses. You gave a recipe for pumpkin preserves. It reads fine until you talk about the final procedure. You say to let it stand overnight and in the morning to boil slowly, stirring well. But you don't say anything about how long to boil.

Kathy Vilseck
kvilseck@hotmail.com

It will depend on the moisture in the pumpkin you are using. Most just need to be brought up to a simmering boil, then processed. But some are a bit watery, often due to the variety or the amount of rain/irrigation they received. This type needs to be simmered while being stirred until it reaches a nice texture. Then it is processed. Sorry for not explaining myself well enough.

— Jackie

I was wondering if you could give me any tips on selling produce from our garden; maybe some eggs too. Can you sell jams and bakery goods, like maybe cookies? How would you price? Also, how do you get hold of say Farmers Market in Portland and in Vancouver? I have no idea how to go about renting a stall, or how much it costs. I'm thinking jams and maybe handmade things would help to make sure you at least cover the rent. The pricing is a puzzle for me. I know people have set up on the side of the road but I don't think that's really legal anymore.

I remember on the country roads near Gold Beach, I saw a few little set-ups with jams and such in front of residences. I really don't know if one could do this now.

We live on a private road, way up a hill so I cannot set up in front of my home. It would have to be at the roadside of a Farmers Market. Hoping to hear from you with great anticipation; I guess it's feeling excited with new possibilities this spring could bring.

Sunny Veitenhans
sunnys-haven@webtv.net

Selling produce from a market garden is not only a decent source of income, but it is a lot of fun, too. You meet many new friends this way. I believe I would start out a little smaller than a big city Farmers Market. As you guessed, the stall rent can be a little high for beginners and you will be competing with the "big boys." I really prefer to do it smaller, more intimately. Some of the places I've sold with luck are: off my tailgate in vacant fields on the edge of medium sized towns (not cities), in private campgrounds (with owner permission, of course), at flea markets, at auctions (again with permission), at senior apartments. (I went once a week, on the same day. I posted a notice and, with permission, I parked in a convenient, out-of-the-way spot in the parking lot.)

The possibilities are endless if you have the produce. Word of mouth is a great advertisement. Folks will call you to buy more often than you'll expect.

As for price, you will have to investigate a bit at local stores. Your fresh, organically grown produce will always sell for a bit more than, say, supermarket produce. But be sure it is better. I got up at 4 a.m. to pick my vegetables and small fruits. I either used any "seconds" or imperfect produce (bug holes in cabbages, small ears of corn, forked carrots, etc.) myself or fed them to my animals and chickens.

You can find the Farmers Market at any location by calling the Chamber of Commerce. They can provide the

location and times the market is being run.

Check out the stands and prices. See what appeals to you, what looks shabby. Little special touches work miracles. For instance, I tripled my sweet corn sales by dumping ice cubes over the pile of corn periodical-ly during the sales day. Likewise, nice color combinations and a colorful canvas market umbrella draw buyers' eyes.

I know of no locale where roadside produce stands are not legal, but I'm sure it will come one day.

Yes you can sell jams, jellies, baked goods, and crafts items. As you will not get your jar back, be sure to charge enough to more than cover *all* of your expenses, as well as your labor and the cost of ingredients. I felt that I made more profit on vegetables and certain baked goods, such as cookies, than I did selling jams and jellies; you'll have to experiment a bit here. I would sell "specialty" jams and jellies. It's hard to compete when selling just grape or apple jelly. Instead, try spiced crab apple jelly, wild blueberry jam, wild blackberry jelly, or chokecherry jelly...something that can't be found in the supermarkets.

— Jackie

How can I find out approximately how many pounds of packaged beef I would have after having a 1,000-lb. steer killed and processed?

Janet Lucas
jarzlucas@brick.net

Well, Janet, that's kind of like asking, "How long is a string?" There are many variables: breed, age, type of feed provided, type of cuts (i.e. bone-less vs bone-in), who does the processing, etc. For instance, if you butcher a 1,000-pound Jersey steer, you will receive back much less meat than if you butcher a 1,000-pound prime Angus steer. Dairy breeds yield more bone in the bone-to-meat ratio than do beef breeds. This certainly is

not to say that dairy breed beef is worthless. It is very good. You will just get fewer pounds of actual meat per carcass.

But, as a rough estimate, a prime Angus steer will lose about 30% of live weight in bone, guts, head, legs, etc. As most butchers hang the car-cass for a week or more to aid tender-ness, you can figure on losing another 3%-4% as the meat also dehydrates slightly.

So, realistically speaking, your prime Angus 1,000-pound steer might yield about 650 pounds of packaged meat. A nice, but not prime beef steer would probably yield 575 pounds. Remember, there is a lot of give and take here. Find a butcher you can trust and let him process your steer. Home-raised beef is really *great*, not like most tough, tasteless supermarket cuts.

— Jackie

Do you have a good method of putting up sauerkraut? I did it years ago, but I don't seem to remember just how I did it. Thanks.

Andy Chumbley
andychum@pacifier.com

One sauerkraut recipe I have that is very good is as follows:

50 lbs. cabbage
1 lb. canning salt

Clean the cabbage heads, removing any wilted, yellow, or dry leaves. Wash and drain the water off. Cut the cabbage into halves or quarters for ease of handling. Use a shredder or sharp knife on a cutting board and cut the cabbage into thin shreds.

In a large bowl or bucket, mix 3 Tbsp. salt and 5 lbs. of cabbage until it wilts. Remove and pack the salted shreds evenly into a large crock. Tamp it down well with your hands. Repeat until all cabbage is used. When done, juice will come to sur-face. If it doesn't, add a boiled, cool

brine made of 2 Tbsp. salt to 1 quart of water.

The cabbage should fill the crock no more than 4 inches from the top. Cover the cabbage with a clean piece of an old white sheet, tucking the ends down along the sides of the crock. Place a china plate over cloth and cabbage, weighing it down to keep the cabbage under the brine con-stantly.

Set crock in an out-of-the-way place at room temperature.

Gas bubbles tell you the cabbage is fermenting. Skim off any scum each day. Be sure to reposition cloth and weighted plate.

The fermentation will be finished in 5 to 6 weeks. Treat your sauerkraut like livestock, tending carefully each day and it will turn out perfectly.

You can home can the kraut by heating about 10 lbs. at a time to a simmer, not rolling boil. Then pack hot into hot quart jars leaving $\frac{1}{2}$ -inch of head space. Cover with hot liquid, again leaving $\frac{1}{2}$ -inch of head space. Wipe the rim, then place a boiled lid and ring on top, and screw the ring down firmly. Process the quarts for 20 minutes in a boiling water bath. Repeat until all kraut has been canned. The 50 pounds of cabbage will give you about 18 quarts of canned sauerkraut.

— Jackie

Is it possible to over-winter tomato plants if they are protected from the cold? We live in the Puget Sound area of Washington State, get about 1-2 weeks of freezing weather per year. In your opinion, is there any advantage to doing this (early start in the spring, better established the second season)? Is it worth the effort, and if the above are yes answers, how should I prepare the plants for the winter?

Bob Taylor
brtaylor@telebyte.net

You can over-winter tomato plants. I even did this in northern Minnesota.

Of course I had a greenhouse...it got down to -55° at times.

But I really don't think it would be worth the effort, although the plants can and do survive. Why don't you try it with a couple of plants and decide. Generally, tomatoes are annuals, but can live longer without frost. One reason they are raised as annuals is that the plants generally expend themselves in one season; they produce heavily, then poop out. Yes, I know that some varieties, under some situations, can remain productive much longer, but I'm just talking about plain old gardening here.

When your season begins to cool, you can prune the plants quite severely and either dig them, potting them in 5-gallon buckets for a few weeks, or place Wall O Waters around them, along with a heavy mulch. I've brought my favorite plants into the house this way and kept 'em going in a sun porch window 'til spring. They will continue to bear fruit all winter

under these conditions, after they recover from the pruning.

I believe I would just start new plants each year, as you can also get into trouble with fungus and viruses with older plants. Likewise, I believe you'll harvest more tomatoes per plant by far by using new plants each year.

Peppers, by the way, are perennial plants, given the chance. I've had a "pet" chilipine (wild hot chili pepper) for five years in a bucket. It looks like a little tree. (Not so little, actually.) Peppers get woody stems and branches and do produce well, year after year, with little extra care. Of course you will have to either protect the pepper row with a set of Wall O Waters (give protection down to about 18°) or dig the plants and bring them into a heated area until the temperatures are back up into the 50s.

— Jackie Δ

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Ayoob on Firearms: Picking a holster

By Massad Ayoob

One good thing about being out in the boonies by yourself is that you can carry a gun on your own property. It's a fundamental right that, for a lot of people, just makes a statement. Quite frankly, it can also be a pretty good idea. The trick is doing it comfortably and, when necessary, discreetly.

The rabid fox or skunk is coming toward your dog. The rifle is in the house, and you're out here with the problem. Are you going to be able to



There's a place for shoulder holsters. On Y2K night, (12/31/99), author reports to work with one issue Ruger .45 in his issue uniform holster, and another in a shoulder rig that will hide under his patrol jacket. Neither had to be called upon.

access that gun and do what needs to be done in time to keep the deadly disease from being transferred to the pet that loves you? Not bloody likely. Can you solve the problem if there's a good handgun at your hip? You bet.

Maybe the problem for you is snakes. Or, in certain parts of America, bears. Or, in other parts of America, creatures that walk on two legs and think the movie "Deliverance" was a training film. The point is, when you need a gun, you generally need it *now*.

There are many good reasons why the firearm is a working tool on a working farm or ranch. The problem might be a predator, or it might be livestock that runs amok. Legendary gun expert Elmer Keith was a working cowhand. Many a time his powerful sixgun saved him from being dragged to death by an out of control horse, or gored or trampled by an enraged steer. His protégé Ross Seyfried, one of today's top experts on firearms and their use afield, carried a 4-inch .44 Magnum when he was working a cattle ranch, and always had a heavy revolver on his belt when guiding hunters on safari in the African bush.

The trick of wearing the gun all the time is getting comfortable with it. Comfort means different things to different people. For editor Dave Duffy, carrying a gun in a hip holster was literally a pain in the butt. He found a shoulder holster that fit him. Suddenly, it was as if the gun wasn't there anymore.

I know people who've had the reverse experience. For them, even the finest shoulder holster felt like an



Massad Ayoob

ill-fitting brassiere, but they quickly grew accustomed to a hip holster.

First, understand that wearing a gun is something you'll need to get used to. Remember when you got your first wallet or purse? You felt like a wallet or purse with a little kid attached. But, after you got used to having it on, it seemed to disappear. The final stage of acceptance was when you realized you felt uncomfortable when it *wasn't* there. It's the same with carrying a handgun all the time.

Second, understand that carrying a gun requires a system. A cheap holster will hang out away from you, its weight pulling against your body, constantly and annoyingly reminding you of its presence. Holsters are like shoes: the watchword is, *buy quality*. The comfort will pay for the added price, long before you reap the dividend of the better product lasting longer.

I can't tell you how many people I've seen show up at my gun classes with expensive guns in cheap holsters. Nor how many I've seen with good guns in good holsters, attached to crappy belts whose institutional



Glock 21, a lightweight .45 that holds 14 rounds with pre-ban magazines, can ride comfortably all day in this accessible, concealable hip holster by High Noon.

memory must have been the words, "Attention, K-Mart Shoppers."

In the same sense that the knee bone is connected to the thigh bone and all of that, the gun is connected to the holster and the holster is connected to the belt. You wouldn't buy a Volvo to keep your family safe, and then outfit it with two-ply retread tires to save money. Believe me, a \$200 traded-in .357 police service revolver, in a \$100 holster on a \$50 mated dress gun belt, will be a far more comfortable and effective combination than a \$3,000 custom .45 automatic in a \$15 nylon holster on a floppy, narrow belt.

My police department issues us a fine gun and a fine holster, and leaves the rest of our leather up to us. My Ruger .45 automatic rides in a Safariland 070 state-of-the-art duty holster, with an orthopedic curve that keeps it from chafing the hip. My duty belt was custom made by Milt Sparks Leather, also orthopedically curved, and even though I'm kind of old and decrepit for road patrol, I can do two back to back shifts wearing it with all the heavy equipment and not feel discomfort. That's how important the belt is.

I'm off duty as I write this. On my hip is a Glock 30, a lightweight, compact, 11-shot .45 automatic. The inside the waistband holster and the belt are by Mitch Rosen Extraordinary Gunleather, sold through our pro shop at Armor of

NH, PO Box 122, Concord, NH 03302. It feels like it isn't there.

Part of that is habituation: I'm used to wearing it. Part of it is that, since I usually wear a holstered gun inside my waistband (it conceals better that way) most of my trousers including the ones I'm wearing are two inches large in the waist. The gun is an intrusive presence on your body. You have to adapt to it.

Get a good holster and a good belt of the proper width. Strap on the gun. Wear it for a week, from when you dress in the morning to when you undress for the final time at night. After that week, you'll find your body is acclimating to having the gun on, and all of a sudden, it's not an inconvenience anymore. It'll be like the wallet or the purse. You'll know you've "arrived" when you realize you're uncomfortable when you're *not* wearing it.

Welcome to the wonderful world of the armed, safe, free American citizen, living responsibly in a backwoods home. Δ



Author's department issue P90 and Safariland SS-III duty holster ride comfortably on orthopedically cut Milt Sparks duty belt. Other equipment includes spare magazines, SureFire flashlight carrier, handcuff case, and latex gloves.

Mending basics

By Genie Dickerson

Mending isn't anyone's favorite activity. But it's one way of conserving precious resources. The nice-looking usable clothing that comes from mending gives a real feeling of satisfaction and pride. And no other activity helps a budget so much with so little work.

The first secret to keeping mending time to a minimum is to catch tears and holes before they get big. The work is shorter then and faster. Also, a small repair looks better than a big one.

Gather your mending items into a basket, shoe box, or frozen dinner tray. Set it up next to your favorite spot for watching television, near the telephone, or by your sewing machine. Some of the best times for mending are during television commercials and while you are on the phone. Most mends take less than five minutes.

In your mending box keep a darning egg or light bulb. Also, hand sewing moves quicker with a thimble. You'll need a variety of needles, mostly sharps and embroidery needles with big eyes. Half a dozen colors of thread (polyester, cotton, or a blend) are really all that you need, because mending stitches rarely show anyway. You'll want white thread plus black and probably navy, gray, etc.

Any scissors will do, although a five- or six-inch pair with a sharp point is ideal. Keep a button jar with buttons from discarded clothing or extras from any new garments you make. Run a length of thread through the eyes of sets of buttons and knot it. Then you'll know at a glance exactly how many of a type you have. You may want an entire set for making a

new outfit or for replacing all of the buttons on older clothing.

To darn a hole in a sock, first run a couple of rows of thread around the hole, then weave a few more rows across the hole (Fig. 1). Try to keep the repair smooth and flat, for the comfort of the wearer. With darning, it's better not to knot the thread, because the knot might cause a blister to form on the wearer's foot.

Use your sewing machine to close a torn seam by sewing right down the seam line where the other stitches became undone. Or by hand do a line of stitches—running stitch (Fig. 2) or backstitch—down the seam line.

To attach a button, run six to eight loops of thread through each hole. Buttons on thick coats need one more step. Insert a toothpick, matchstick, thin knitting needle—anything long and narrow—between the button and the garment during sewing. Sew the thread loops in the same way as before, except that now the button is being kept a little farther from the fabric. After sewing, pull out the toothpick.

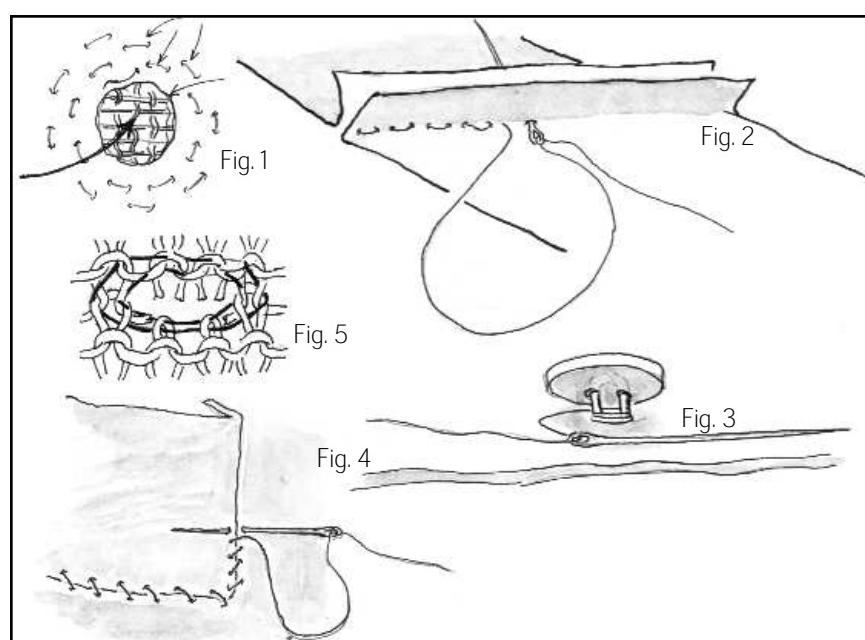
After sewing the loops, wrap the remaining thread around the thread shank (Fig. 3). A long thread shank helps the garment to look nice after it's buttoned. Also, the button will stay on longer, even with the added strain of a coat.

For buttons and other high stress parts of garments, use a double strand of thread with ends knotted together. For lower stress parts or where stitches show, use a single strand.

To patch a knee or elbow, you might prefer iron-on patches, widely available in fabric stores and supermarkets. But a fabric patch looks better. To make a quick one, cut a scrap of other fabric slightly bigger than the hole. Turn the edges under, about half an inch. Sew the patch to the garment with an over-and-under (overcast) stitch along the edge of the patch (Fig. 4).

For a hole in a sweater, use regular thread (a scrap of yarn is even better) to secure loose loops and prevent a run. Then draw the loose loops together to close the hole (Fig. 5).

All of these tips are fast, easy, and save money. But the best part is that they provide you and your family with something nice to wear. △



Build a pallet fence

By Clay Sawyer

If you have access to various sizes of free pallets, consider this idea for your next fence. Now I know for a fact that I would rather dig a ditch with a spoon than pull "nailed on boards." But when faced with the retail cost of a new fence from the

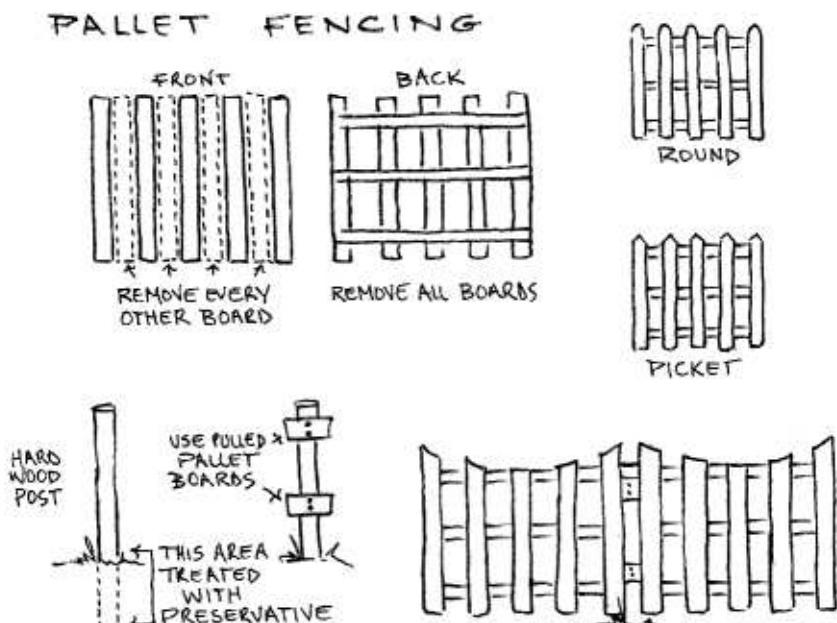
excellent condition and very similar to the diagram.

After the area for the fence is measured and the pallets are collected, cut the number of posts you will need. You should use dry hardwood for your posts, and don't forget to measure them as the length and width will vary with your type of pallet. Also,

put preservative in a spray bottle and apply.) Set posts aside to dry according to manufacturer's instructions—roughly 48 hours.

Now from the front of the first pallet, pull every other board, then remove all boards from the back. Use a jigsaw to cut the tops on the front of the pallet to a design that pleases you. Use the diagram suggestions or design your own ideas.

When all pallets are ready and posts are dry, dig at least two holes, two feet deep to start. (To break up the monotony, I generally secure each section and dig holes as I move along.) Once two posts are firmly secure in the ground use your extra boards, measure and cut, then screw or nail to front of posts as shown in the diagram. These boards will hold the pallets to the post. Screw them in from the back side of the fence. Continue the process to completion. A gate, if needed, is easily made from a small pallet with tops cut to match the rest of the fence. Built with patience, this fence will meet your needs in both strength and appearance. An expensive fence built in haste, in my opinion, won't hold a candle to a well made pallet fence. Δ



Inexpensive, and often free, used pallets can make attractive and durable fencing

Home Improvement Center, I will happily run for the hammer when the cost is nearly nothing.

Untreated, stained, or painted to your preference, a pallet fence should last for many years, although I strongly advise you at least treat the dirt-bound end of your posts with Thompson's Water Sealer or some equally comparable preservative. The finished pallets should also be affixed to a height of at least 3 inches from the ground to help prolong the life of the fence.

Selecting pallets

Important from the very start is pallet selection. Pallets should be in

you should add two feet to the length of each finished post for ground depth and apply some preservative to the two feet, plus another six inches that will be exposed above ground. (I

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Tanning hides at home - low labor, low cost

By Anita Evangelista

When hunting, or after processing livestock for the table, it's such a shame to have to toss out a nice pelt. Even so, for lack of time, equipment, know-how, or for economic reasons, more skins than can be counted have ended up discarded.

There is a method of tanning hides that is low-cost and low-labor, compared to other methods or to "custom tanning." This is a system that I've personally used to tan sheep skins, deer skins, groundhog pelts, rabbit hides, and goat skins—but the procedure is endlessly applicable to all kinds of mammal pelts when you want the fur or fiber to remain on the skin. An average pelt takes about an hour to process and a couple of days to dry. It costs only a couple of dollars per skin (really) if you're doing a batch, and it results in a soft, workable hide that can be used as-is or cut up for sewing projects.

Handling the skins

The quality of hides you begin with will make a difference in how your pelts tan out. Fresh hides, right off the animal, should be cooled immediately. Trim off any flesh and scrape visible fat from the hide. You don't have to completely scrape it, though. That will take place later, and be much easier at that point. Place the skin in the shade, laying it completely flat with the fur side down, preferably on a cold concrete or rock surface.

When the skin feels cool to the touch (a half-hour or so), immediately cover the fleshy side completely and thoroughly with plain non-iodized salt. Use three to five pounds for a sheep or deer skin. *Don't skimp.* Three pounds of salt costs less than a dollar and this is the first treatment

for a hide which makes the next steps possible. If skins aren't salted within a few hours of removal from the animal, you might as well forget it. They will have already begun the process of decomposition and will probably lose their hair during processing.

At this point, because you're probably busy dealing with the animal carcass and don't need to worry about the pelt, you should leave the skin in a protected spot to dry. You may tack it lightly to a tree, fur side down, or to the side of a barn, or lay it flat wherever is handy. Add salt if you've lost a lot in moving it; the salt will draw moisture from the skin and liquid may pool in low spots. Just add more salt. Transport the skin flat. You can stack several if you keep a good layer of salt between them.

We've had problems with feral cats and other predators gnawing the edges of skins that were too easy for them to get at. So put the hide so it is out of reach, even if that means laying it in the bottom of a cage and locking the troublemakers out. You don't need to stretch the skin; just make sure that it is perfectly flat, with no curled up edges. Let the skin dry until it is crispy. This may take a few days to a couple weeks. When completely dry, the skin is very "stable" and won't change or deteriorate appreciably. We've found salted goat and sheep skins which we'd forgotten in a barn for a couple years. They tanned up as nicely as if they were brand new.

If you can tan within a half hour of taking the hide right off the animal, you may skip the salting step.

Equipment

You'll need two large plastic trash cans, about 30-gallon size, and one lid. In addition, have on hand measuring cups, a wooden stirring stick

about four feet long, staple gun and staples (or hammer and small nails), wire bristle brush, and a wood rack (or stretcher) to tack the animal pelt to for drying.

For a sufficient quantity of tanning solution to tan four sheep, goat, or deer skins; or 10 rabbit skins; or about 6 medium-sized pelts such as groundhogs, use these ingredients (cut the recipe in half for fewer skins):

7 gallons of water
16 cups plain or pickling salt (not iodized)
2 pounds (16 cups) bran flakes
3½ cups battery acid (from auto parts store)
1 box baking soda
about an ounce of Neat's foot oil

Here's how to mix the solution: A couple hours before you plan to tan, take three gallons of water and bring to a boil. Pour this over the two pounds of bran flakes. Let this sit for an hour. Strain the bran out, saving the brownish water solution. Discard the bran flakes (or feed to livestock).

Next, bring the remaining four gallons of water to a boil. Put the 16 cups salt in your plastic trash can. Pour the water over the salt, and use the stirring stick to mix until the salt dissolves. Add to this the brown bran liquid. Stir.

When this solution is lukewarm (neither hot nor cold, comfortable to the touch), you are ready to add the battery acid. Keep the box of baking soda right next to you with the top open. Very, very carefully pour the battery acid along the side of the trash can into the solution—don't let it splash, if you can help it.

If you get battery acid on your skin, use plenty of cool running water to rinse it; then apply the baking soda; rinse again. If battery acid splashes into your eyes or mouth, immediately run cool tap water on the spot for at least 10 minutes. You should see a doctor right away. If battery acid splashes on your clothes, it will eat a hole

into the fabric—flush with water and cover with baking soda.

Stir the battery acid in thoroughly. Keep the trash can lid tightly on this whenever you move away from it, even for a couple of seconds. **It's a good safety habit.**

If you have dried skins, soak them in clear fresh water until flexible. At this point, you can peel off the dried inner skin from the hide fairly readily. If you have fresh skins, use as-is. Add the skins to the solution. Stir the hide or hides, pressing down carefully under the liquid until fully saturated. Leave them to soak for 40 minutes, stirring from time to time to make sure all parts of the hide are exposed to the solution. After 40 minutes, the soaking tan is complete.

During the soak, fill your other trash can with lukewarm clear water. When the time is up, use the stirring stick and move the skins one-by-one into your other trash can. This is the rinsing process which removes excess salt from the skins. Stir and slosh the skins for about five minutes, changing the water if it gets very dirty-looking.

At this point, some people add the box of baking soda to the rinse water. There are pros and cons on this decision. Adding baking soda will neutralize some of the acid in the skin—this is good because there will be less possibility of residual acid in the fur to affect sensitive people. However, this also may cause the preserving effects of the acid to be neutralized, as well. You need to make the choice to use baking soda based on your own end use for the skin. If skin or fur will spend a lot of time in contact with human skin, I'd use the baking soda. If the pelt will be used as a rug or wall hanging, I probably wouldn't.

Remove the hides from the rinse water; they will be very heavy. Let them hang over a board or the back of a chair or other firm surface to drain. If the pelt has any tears or holes, you can mend them at this point. Use waxed cotton thread (run a candle

along your thread after it is in the needle). A whip stitch, as you'll often see on moccasins, makes a secure and relatively invisible mend. If the hole is large, you can cut a piece off the leg ends and sew it in place.

Now, using a sponge, rag, paper towels, or a paint brush, swab the still-damp skin-side of the hide with about an ounce of Neat's foot oil. It should be absorbed fairly quickly, leaving only a little oily residue. That's okay.

Tack the hide up, skin side down, to your "stretcher." We use salvaged wood pallets. Gently pull the hide as you tack it so that there is some tension in the skin. No need to exert excess pressure or over-stretch. Try to put your tacks around the edges so that the marks won't show later.

Set the hide in a shady place to dry. A slow, steady drying with plenty of fresh air circulation and **no direct sunlight** produces the best results.

Your tanning solution can be neutralized for disposal by adding a couple boxes of baking soda to it. It will froth and bubble vigorously and release a potentially toxic or irritating gas, so give it plenty of ventilation and get away from the bucket while this is happening. When all the bubbling has stopped, about five minutes later, you can pour the mix out. Your town may have ordinances preventing you from pouring it down drains, and all that salt would be hard on metal pipes and septic systems. I've heard of people putting this salty mix on driveways and paths where they wanted to stop weeds and grass from growing. We have a small farm and generally put it on dirt driveways to keep them clear of weeds.

Check the hide every day. When the skin side feels dry to the touch in the center, but still flexible and somewhat soft (before the skin is crispy-dry) take it down from the rack. Lay the hide fur-side down and go over the skin with a wire bristle brush. This softens the skin and lightens the color. Don't brush heavily or exces-

sively in one spot, just enough to give it a "suede-like" appearance. After this, set the skin where it can fully dry for a day or so longer.

At this point, the skin is finished. Lay it on a chair, or fit it onto your car seat. Doesn't that look great?

Care: Skins processed by this method can't be washed without some loss of quality. Washed skins get very crisp and uneven when dried. However, you can thoroughly brush the fur side, shake out the skin, vacuum it, or wire brush the skin side to touch up any very dirty spots. Depending on how well you rinsed the hide after tanning, there may be some residual salt in the fur. This can be drying to human skin, and may leave little white flecks around, and might even absorb moisture from the air if your weather is humid. Other than being uncomfortable or making a mess, this shouldn't be a problem. The salt eventually works out of the skin.

Final thought

Once your friends know you can tan hides, be prepared for them to bring around their hunting trophies and livestock skins for treatment. If you decide to do this, take my advice: don't do it for free. Commercial tanners get \$25-\$45 to tan a hide, and you should price your work accordingly—even if your return is just a case of beer. Otherwise, you'll find yourself swamped with every little skin in your region and left with no time for anything else.

In exchange, your friends can expect to get a professional top quality job, with an up-front understanding about what might go wrong (skin loses fur, for example), and what kind of compensation you get. People get very sensitive about "that special skin." This kind of precaution will prevent any potential misunderstandings and help you keep your friends.

Anyway, it's such a fun pastime—don't say I didn't warn you. Δ

What do you do with all those eggs?

Rice pudding

2 cups cooked rice
1/8 tsp. salt
1 Tbsp. butter, cut up or melted
3 eggs

1 1/3 cups milk
5 Tbsp. sugar
1 tsp. vanilla

Combine everything and mix well. Pour into a greased 9x9-inch dish and bake at 325° for 50 minutes or until set.

Rice pudding is good hot or cold. Leftovers are great for breakfast the next morning. If you prefer a sweeter pudding, add a few more tablespoons of sugar, or sprinkle sugar over the top when it's done. For a richer pudding, use more eggs. For a different taste, substitute a teaspoon of cinnamon for the vanilla.

Quiche Lorraine

9-inch piecrust (See separate recipe, or use a ready-made crust.)
Several thin slices Swiss cheese
6 pieces cooked bacon, crumbled

1 cup shredded cheddar cheese
(or preferred cheese)
6 eggs
1 1/4 cups milk or cream
salt and pepper to taste
1 carrot, shredded

Line the bottom of the pie crust with Swiss cheese slices. Sprinkle on the crumbled bacon and a third of the shredded cheese.

In a bowl, mix the milk and eggs together very well and add salt and pepper. Shred carrot over the bowl and mix it in along with another third of the shredded cheese. Pour this mixture carefully into the pie dish and top with the rest of the cheese. Bake at 375° for 40 to 45 minutes, or until it is set firm.

(The Jiggle Test: Put your finger near the center of the quiche and try to jiggle it. If it doesn't move, it's done.) Let sit five to ten minutes before serving.
(Substitute a diced onion or any chopped vegetable for the carrot. Steam first to reduce moisture and keep your quiche from becoming soggy.)

Pie crust

1 cup all-purpose flour
1/4 cup whole wheat flour
1/2 tsp. salt

6 Tbsp. + 1 tsp. shortening
4 or 5 Tbsp. cold water

Mix the flours and salt together, then cut in the shortening until the mixture resembles crumbs.

Sprinkle the water over the mixture one spoonful at a time, blending it in with a fork, until the dough is just moistened.
Roll out on a lightly floured surface.
Bake at 450° for about 10 minutes, or until slightly browned.
(Weight with beans wrapped in tinfoil if you like.)

By Katherine Dazazel

Last year a friend gave me two White Leghorn pullets. "No farm is complete without a couple of chickens," he said. I'd been hoping a pond would somehow magically appear on my land so I could have ducks, but the chickens were free and my friend promised me they wouldn't be any trouble. I stuck them in an old chicken coop I use for storing hay, and fed them the same cracked corn my sheep and goats get. Pretty soon they figured out how to escape the coop, and I found them scratching around and clucking like they'd just hopped out of a storybook. A month or two later I found the first egg, laid in a hay nest one of the hens had made. I was delighted and put it in the refrigerator. The next day there were two eggs, and the next day two more, and the next day two more—soon it was hard to believe I only had two hens instead of two dozen.

Now I have the perfect excuse to try all those rich eggy recipes that I've been skipping. Before, I couldn't stand using up half a dozen store-bought eggs at once.

Thanks to my two hens, even while making the following recipes frequently, I don't have to buy eggs anymore. Maybe this year I'll pick up a few Rhode Island Reds. △



Author's White Leghorn hens

Deviled eggs

6 eggs	paprika
mayonnaise	chopped chives (optional)
mustard	bacon bits (optional)

Hard-boil six eggs and set aside until they are cool enough to peel. When peeled, slice in half lengthwise and scoop the yolks out into a bowl. With the edge of a spoon, cut up the yolks until they are very finely chopped—don't mash them. Add a few generous spoonfuls of mayonnaise and a very small amount of mustard, until the mixture looks and tastes right.

Refill the eggs with the mixture. Be generous; there is now a lot more to put in than there was to take out. Sprinkle with a little paprika to make them look nice. You can also add a teaspoonful or so of chopped chives, or bacon bits.

Chocolate pound cake

1 cup (2 sticks) butter	3 cups cocoa
8 Tbsp. (½ cup) shortening	½ tsp. baking powder
3 cups sugar	½ tsp. salt
6 eggs	1¼ cups milk
3 cups cake flour	2 tsp. vanilla

Cream the butter and shortening together with the sugar. Add the eggs one at a time, and blend well after each one. Sift all dry ingredients and add alternately with milk. Add vanilla and blend well. The batter will be stiffer than most cake batter. Spoon (it won't pour) into a greased and floured tube pan and smooth the top of the batter so it's even. Bake at 325° for one hour and 25 minutes.

Sally Lunn bread

(This is a cake-like yeast bread that doesn't require kneading.)

1½ cups all-purpose flour	½ tsp. salt
⅓ cup sugar	½ cup each water and milk
1 envelope yeast (Make sure you get a kind that has the quick-rise option. It will say on the package.)	½ cup (1 stick) butter, cut up small
	3 eggs
	About 2½ cups more flour

Mix 1½ cups flour, sugar, dry yeast, and salt. Heat together water, milk, and butter until hot, but not boiling, and stir into the dry ingredients. Stir in the eggs and enough flour to make the dough about the consistency of biscuit dough. Cover and set aside for ten minutes, then beat well for about a minute. Spoon into a greased tube pan, cover, and let rise for about an hour, or until doubled in size. Bake at 325° for 40 minutes.

Build a log crib

By Dorothy Ainsworth

Baby Zane is probably the only newborn in Hollywood sleeping in a log crib made by his grandmother in Oregon, but it was inevitable.

He inherited a chainsaw-wielding grandma who builds log houses, and a horse-loving mom who dreams of a ranch someday. Their California apartment is decorated Western-style, right down to his diaper bag hanging on a saddlehorn, so the crib fits right in.

After hearing the exciting news from L.A. that a grandson was on the way, I was all a-twitter with ideas for homemade gifts, and turned to what I know best—logs.

I designed a crib that could be assembled and disassembled in minutes, so it could be moved into an upstairs apartment.

Then I ventured back into the forest with only a handsaw this time, but in the same old Ford pickup that has carried 800 logs for 3 houses (see *BHM* back issues #27, #32, #50).

If anyone out there wants to tackle this fun but time-consuming project, here's how to do it with a small electric chainsaw, an orbital sander, and a $\frac{1}{2}$ -inch electric drill. (If you have a lathe and drill press, all the better.)

You can obtain a firewood or pole permit from the USFS or BLM. There are designated cutting areas and the fee is nominal.

My plan called for 4 posts, 8 rails, and 44 rungs. I gathered plenty of extra footage without cutting anything that was rooted in. The forest has downed-trees and fallen limbs everywhere. After a few minutes of tromping around you get an eagle-eye for spotting the perfect-sized logs.



Below: Dorothy uses her electric chainsaw to shave a tenon.

Top: The finished log crib.

List of raw materials:

- (4) 4"- 5" diameter 4½ - footers (posts)
- (4) 3"- 3½" diameter 5 ½ - footers (side rails)
- (4) 3"- 3½" diameter 40 - inchers (end rails)
- (30) 1½" diameter 24 - inchers (side rungs)
- (14) 1½" diameter 30 - inchers (end rungs)

Carefully pick straight logs with very little taper (preferably Lodgepole pine). Choose the longest logs and branches you can find and cut them to length later. You never know what's under the bark until you peel it. When you're back at home, you may find a knot or crack in just the wrong spot and you'll have to move up or down with your measurements.

Build a rudimentary peeling stand out of 2 x 4's with two braced "Xs" about 5 feet apart. The "Vs" will hold your logs and branches securely and allow turning them as you peel with a drawknife. (Drawknives are available at most hardware stores for about \$35.)

Peel your stock, then sand the attractive knots, and smooth down anything rough.

Cut all posts and rails to length and lay them out on the floor, arranging them the way you'd like them to show in the finished crib. Number and mark them with masking tape. Each log will have its own character and you may have aesthetic preferences in pairing them up.

Do not precut your rungs to exact lengths yet. Cut them all 2 inches too long.

Now you're going to make 8 giant rolling pins. Find the imaginary centerline of each rail by eyeballing it as best you can and draw a 2-inch circle on each end to mark the tenon size. Measure up 7¼ inches from each end and draw a circle around the log to mark tenon length.



Marking rung length and depth of holes to drill

Grab your chainsaw and lightly go back and forth along the length of the tenon, rat-a-tat-tat, moving the saw like a machine gun. As the chips fly, turn the log frequently until you shave it down to a 2-inch diameter cylinder the full length of the tenon.

Sand it smooth. Do this 16 times. You might want to practice on a scrap log first until you get the technique down.

You're now ready to drill 16 holes in the 4 posts so you can plug the tenons in and erect the frame.

Use a 2⅛-inch self-feed bit for fast boring and clean accurate holes. Measure up 14 inches and 38 inches respectively from the bottom of each post to mark your hole centers. Then turn the posts exactly 90° and measure up 10½ inches and 41½ inches to mark the second set of hole centers.



Yes! I built it in my living room.



Top left: Close-up of rungs I chose with "extra character." Right: Pegs that hold the crib together. Note—one is offset so I didn't have to cut into the knot. Bottom left: Dorothy gathering the raw materials. Center: Cynthia with Zane. Right: The pile of logs and branches that will become the crib.

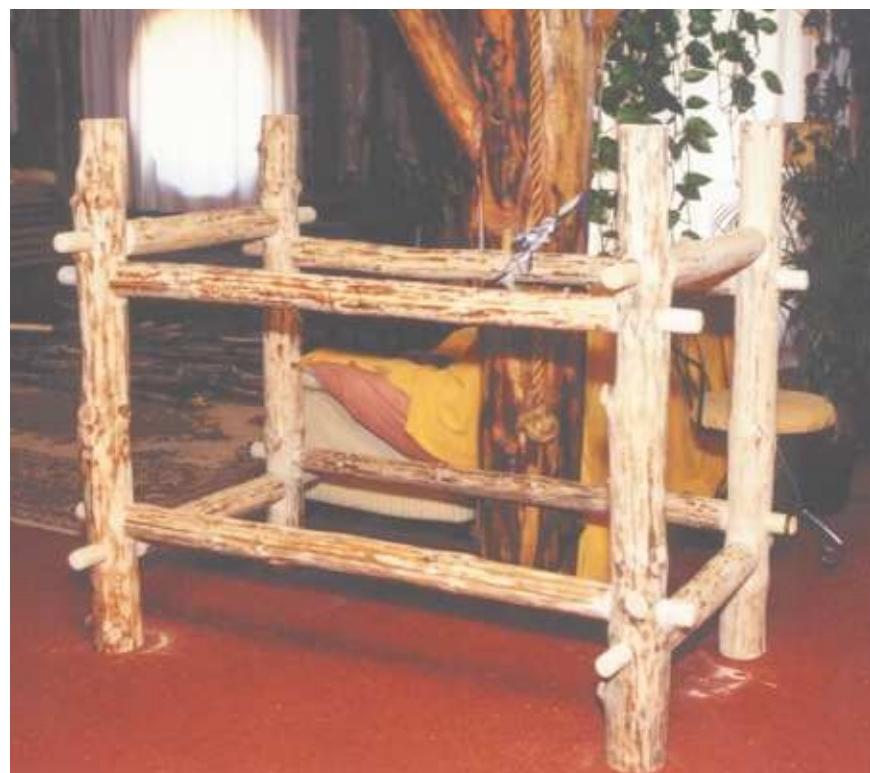
Secure the post any way you can (I clamped it in the peeling stand) and drill the holes.

Now for the moment of truth. Put the entire frame together to see how square it is. If your holes are a little "off," you can make adjustments by shaving the tenons to fit. Use a plastic or white rubber mallet to "coax" it into submission.

When you get to this point, buy a standard crib mattress (52 inches x 27 inches) and make sure it fits into the rectangle you've created. If not, chisel and sand, chisel and sand. (Mattresses are about \$40 - \$80 at Sears and Wal-Mart.)

Next step is to determine the rung lengths. Take your 3-dimensional crib apart and lay the 4 separate sections down on the floor and square them up nicely (no parallelograms please.). Place your slightly overlength rungs $3\frac{1}{4}$ inches apart (on center) on top of the rails, to form a grid (see photo).

You'll be gluing the rungs into holes drilled in the top and bottom rails, so run two horizontal strips of masking tape (exactly parallel to each other) at the depth you want the bottom of each row of holes and mark a line. If your log is tapered, holes will be deep on one end and shallow on the other. Still using the tape as your



First assembly of frame to see if tenons slide easily into holes and also to check for plumb, level, and square, and to try mattress in the rectangle.

guide, mark the rungs at the length where they will bottom out in the holes, but not a micron longer. Too long won't work but too short can be fixed with extra glue in the hole.

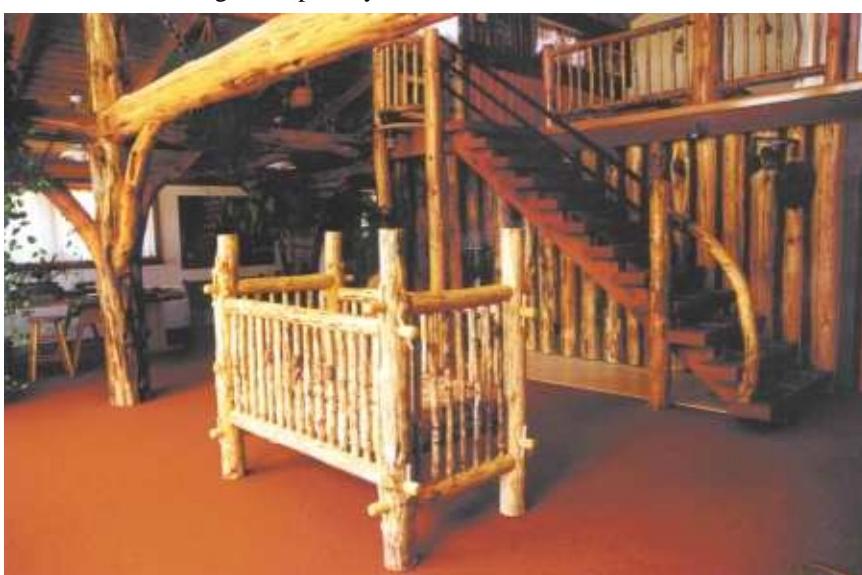
Now number the rungs in their correct order and lay them aside.

Remove tape and turn the rail 90° , snap a chalkline for your row of holes and mark them $3\frac{1}{4}$ inches apart (on center). This measurement is critical because there is a safety law to protect babies. The actual space between rungs cannot exceed $2\frac{3}{8}$ inches.

Drill the holes to your depth-line with a $1\frac{1}{4}$ -inch drill bit. Whittle or sand a "tenon" on both ends of all the rungs down to $1\frac{1}{4}$ -inch diameter so they'll plug into the holes. (A stationary table-top belt sander would come in handy here.)

With Elmer's or Titebond, glue the rungs into the holes one row at a time (make gravity your friend when it comes to thin glue). When all the rungs are set and the glue is completely dry, put the crib together. Use a little "friendly persuasion" again with your mallet, and make sure all members fit tightly together, and are plumb, level, and square.

It's now time to drill a peg hole down through the top of each tenon.



The crib goes well with my log living room.

Place a short dowel on the tenon, where you want the hole, vertically as close to the post as you can get, and draw around it with a pencil. To insure the pegs will pull the frame together when they're "drifted" in, you may need to chisel away grooves in the posts above where the pegs enter, so you can slide them into the holes. Gnarly logs always require custom fitting. Drill the holes with a long 5/8-inch drill bit.

Make 16 pegs 6 inches long out of 5/8-inch dowels. Whittle or sand each one to a slight taper and then drive 'em home. This is the fun part.

Finish the crib with a non-toxic water-based polyurethane stain and you're ready to "hang" the spring to receive the mattress. You can buy a standard-sized flat crib spring at almost any used baby-clothing store, or Goodwill or Salvation Army, for \$5 - \$10. Plywood is also an option. Put hooks or brackets at two separate levels so you can adjust the mattress height as the baby grows. I set my hooks at 17 inches and 25 inches (up from bottom of posts). Install the spring and mattress.

You're finished. Make the bed with a mattress pad, a new sheet, a padded crib liner, and a soft homemade quilt and it's ready for baby—maybe even generations of babies.

(Editor's note: You can commission Dorothy to handcraft a log crib for your baby, if you like the style, but not the work involved. For details, write to her at 2909 Dead Indian Memorial Road, Ashland, Oregon 97520.) △

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A child's garden— more than child's play

By Jackie Clay

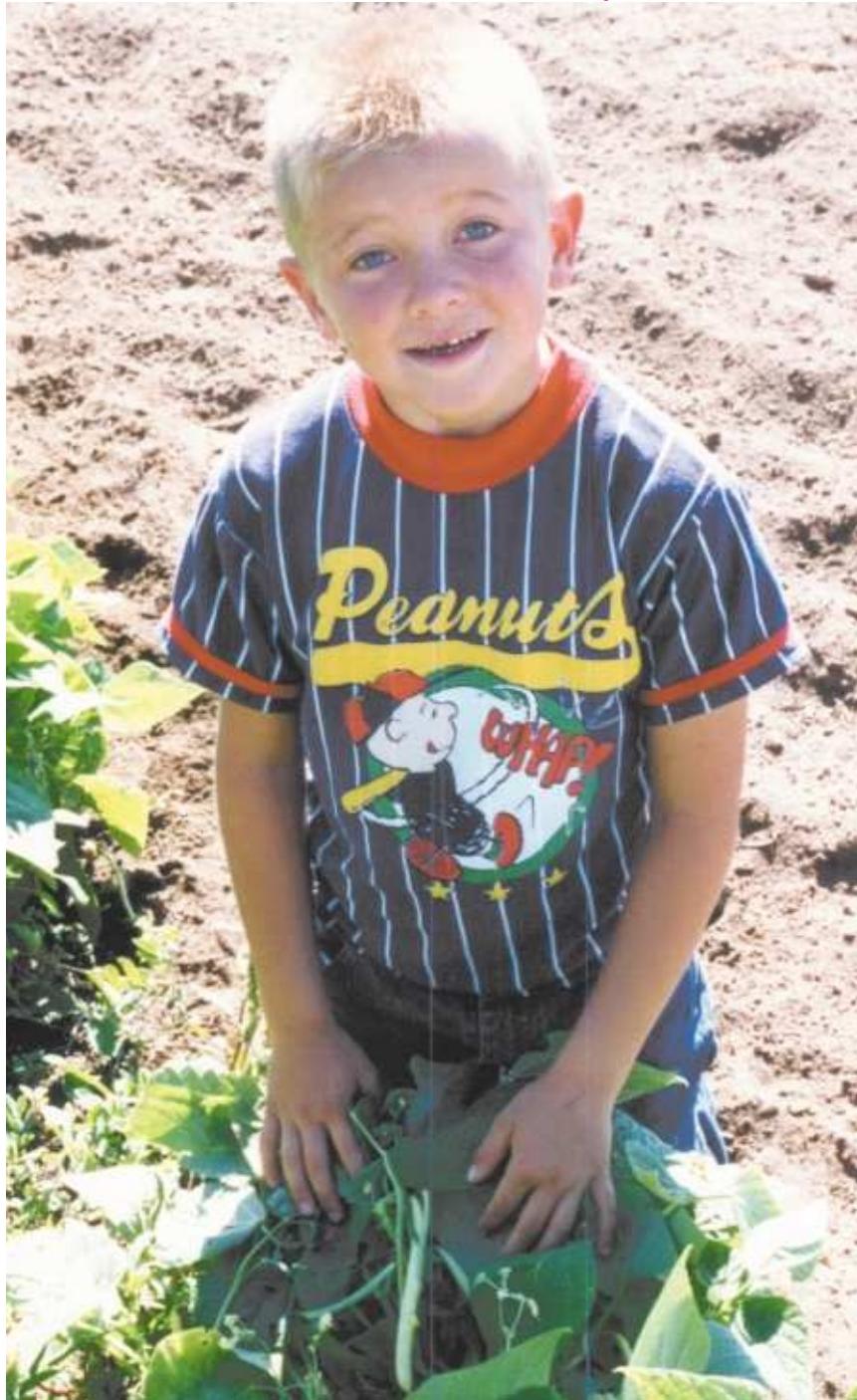
There are many things parents can give their children, other than plastic toys or a few bucks to play video games at the mall. And one of the most valuable is a garden of their own.

Children of even a very young age thrill at the experience of planting seeds in the warm earth, then watching as plants pop magically out of the soil. My children have all had their own gardens. Sometimes it was a row incorporated in with the family's "big" garden. But often their gardens were in their own separate plots. And, despite the occasional grumbling at having to regularly weed and water, every one of them became joyous at harvest. You can't surpass the excitement of eating and home canning scrumptious food that you grew yourself, even at age three.

Learning patience

A child's garden bonds the parents with the child, as both work together. There are decisions about what to plant, where the garden is to be, special features (such as a bean tipi or sunflower bower), etc. Then the soil must be worked up. For young children, Mom or Dad must dig or rototill the soil. But when the children have grown a bit, they can join in, digging with energy. Even very young children can learn to rake the soil smooth and toss rocks into a bucket. This togetherness is a special time which cannot be duplicated.

Gardening children learn patience, waiting in expectation as germinating seeds slowly develop underground. While they wait, they develop a sense



David Clay finds the first Contender green beans of summer.

of responsibility. Those baby plants must be nurtured, weeded, and cared for or they die. Just like real human babies.

And what love children shower on their plants. I've lost count of the hundreds of times I've been dragged to one of the children's gardens to see a new bean seedling that has magically emerged from the spring soil, a tiny watermelon or pumpkin that has set on the vine, or a butterfly flitting from one flower to the next. And I never cease to share that special excitement.

Having simple chores that have to be done on a regular basis teaches life lessons that cannot be duplicated. Here at our home we believe you labor to eat well, and that this labor should be one of joy, not drudgery. It is great to eat the fruits of your labor. And if you do not labor, or you are slipshod about it, you will not reap the benefits you could have.

Older children

Older children often need a little extra spending money. Instead of just handing them the cash, why not suggest they raise a crop to sell? My children have raised green beans, sweet corn, and tomatoes to market and used the profits to buy school clothes, above and beyond the usual wardrobe I bought for them. They've also used the money earned from their garden to buy a bike and even a horse.

By allowing children to become small time market growers, they learn to save money, value their earnings, and work toward realistic goals. These are all things that they must learn for themselves, with a little help from you.

For even a very small child, raising a giant pumpkin for Halloween or the fair which they must tend all summer is a lesson in how to work toward a realistic goal. Children develop confidence, learning that if they persist, they can do anything.



Halloween is even more fun when the pumpkin is as big as you are, and it comes from your own garden.

Gardening can be your child's first step into a self-reliant life.

Garden size

Even if you have quite limited gardening space, your child can still have his or her own garden by container gardening. Children can still feel the thrill of growing, even if their garden is a single plastic tub holding potatoes or a climbing tomato, or if it's several containers full of green beans, flowers, and pumpkins.

But if you have more space, consider working up a separate garden plot just for your child. And if there is more than one child, discuss with them the option as to whether they would rather garden together or have their own separate plots. Some chil-

dren prefer to have someone to work with so they can discuss each procedure. Others like to garden alone.

Don't give the child more than they are ready to handle. Giving a 3-year-old, or a bouncy sort-of-irresponsible 10-year-old, a large garden is not going to work. It's better to start out small—and let the child ask you for more next year—than to overburden a youngster with too much work and responsibility. This is an individual thing. Some 10-year-olds are responsible enough to handle the weeding and care of a fairly large garden and can even choose their crops. Others have all they care to handle with a few tomato plants. Don't force the issue. Gardening should be a joy, not a drudgery.

A nice sized garden for a very young child is about 10-feet by 10-feet. This can be handled by the child with only a little parental help with the hard stuff. It is quick to work up and easy to hoe and hand-weed, yet it allows the youngster to grow quite a wide array of vegetables.

As the child shows more responsibility, and asks for more room, give a little at a time, as they often don't realize how much work a large garden actually is. Even we adults sometimes get overly energetic during the spring planting time, forgetting all the weeding, thinning, and other care that is going to be required later.

My youngest son, David, has a garden that is 10-feet wide by 50-feet long. He is 10 and has been gardening on his own since he was 3. This plot allows him to grow several crops, including sweet corn and his own special giant pumpkin. But it is still doable for him. Yep, it does get a little weedy from time to time, but he can handle it. And all winter he draws garden plans and looks through seed catalogs to decide what he wants to plant.

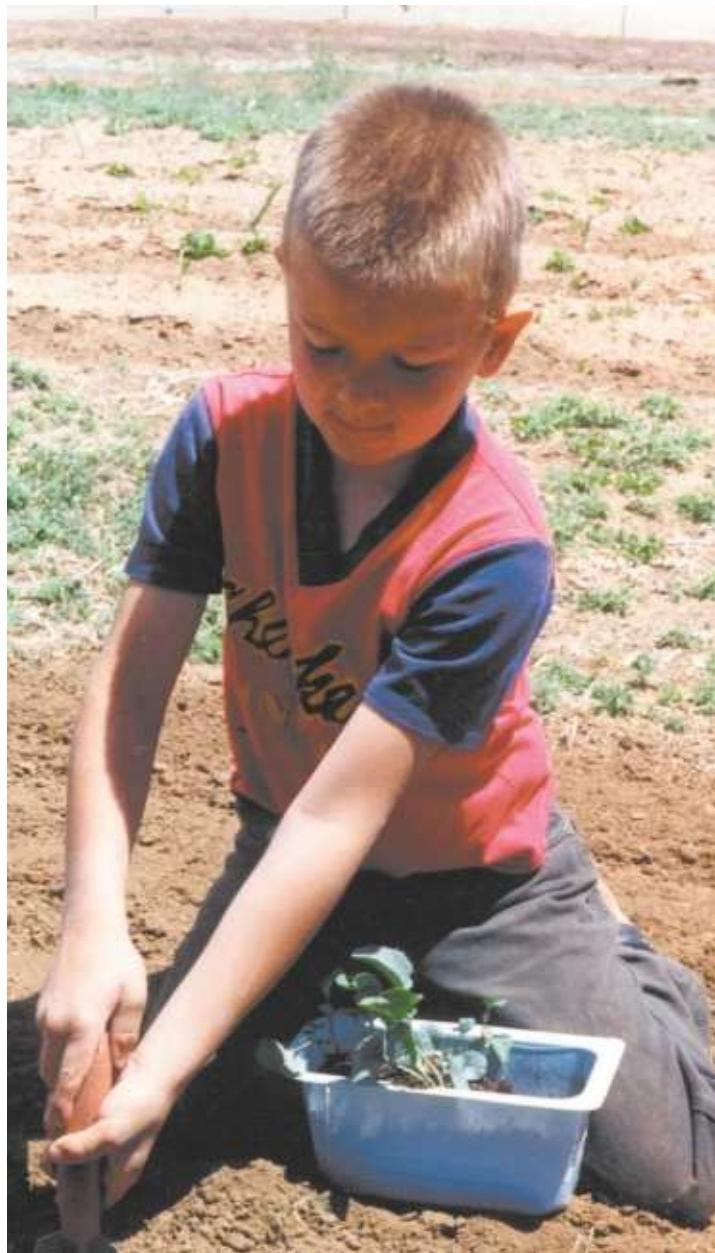
David's garden also provides many added bonuses. It encourages him to read. He reads seed catalogs, children's gardening books, and attempts to read gardening magazines. It encourages him to write and spell, as we make row markers and write down daily happenings in a small notebook: "The beans popped up." "The birds eat corn."

It's fun and an educational help. We even talk a lot

about germination, open-pollinated varieties (from which we gather and save seeds), seed saving techniques, pollination, honey production, life cycles, etc. Many high school subjects are covered with just daily conversations in the garden. Not bad for a 10-year-old.

Suggested crops

It's best to pick large-seeded vegetables or started plants, such as



Plants are easy for young hands to handle.

tomato or broccoli, for younger children. The large items are easier for little hands to hold and plant. And, large seeds quickly develop into lusty plants, which are visible and easily distinguished from weeds, protecting them from over-eager hoeing.

Among the suggested vegetables for children's gardens are: sweet corn, peas, radishes, green beans, tomatoes, pumpkins, gourds, and annual flowers such as sunflowers, cosmos, marigolds, and morning glories. Help your child choose easy-to-grow varieties, which germinate quickly and grow rampantly. Avoid such crops as carrots and parsnips, as they germinate slowly and produce tiny, slow-growing seedlings. Such crops quickly become overrun with weeds and the child loses interest. Save them for future years when they have had more experience.

I like to throw in one type of vegetable my child does not like to eat. In growing it in their own garden, the child forms an attachment to the vegetable and, when harvested, is much more apt to give it a try. This is especially true when they help you cook it using a really tasty recipe.

Try giant varieties of vegetable seeds. They hold special appeal for children. David now grows giant pumpkins, bushel gourds, giant sunflowers, and giant tomatoes. Kids love harvesting huge vegetables from their own garden. They subscribe to the

“bigger the better” philosophy. (You know how they keep asking when they will be “big.”) It’s truly awesome to them to harvest a pumpkin that they can sit on, a tomato that produces slices big enough to cover a slice of sandwich bread, or a sunflower that is taller than Mom and Dad.

Another thing we do is grow ethnic vegetable varieties in our garden. You might like to try that one, too. Our family has Native American roots—Cherokee on my husband, Bob's, side. As the Cherokee have always been a gardening people, there are lots of traditional heritage crops for David to try. We've grown Cherokee White Flour Corn, which also makes great sweet corn and is nine feet tall, Cherokee Trail of Tears pole green beans, which mature to a pretty purple, various squash, and Cherokee Cornfield Beans.

Whether your family traces their roots to African-American, Italian, Mexican, Spanish, Irish, or any other roots there are crops your child could grow that would not only produce smiles but pride in their native heritage. Besides it's a lot of fun to learn about crops our ancestors grew. Even Moms and Dads can learn a lot in the process, and the sharing of this special experience is without measure.

Special effects

Do you want to make your child's garden magical? Consider adding such special effects as a bean tipi on which pole beans can climb, a sunflower bower, or even a chicken wire-based dragon covered with runner beans resplendent with red flowers and dragon-sized bean pods.

A bean tipi is easily constructed by tying four or more poles, one to two inches in diameter, together at the top and pushing the poles into the soil at the bottom, forming a tipi shape. At the base of each pole plant four or five bean seeds. We also add blue morning glory and small mixed

gourd seeds for color variation and interest. Using scarlet runner beans, purple-podded green beans, or yellow pole beans also adds variety. Heavily mulch the “inside” of the tipi with straw, then place a small bench in the center. This makes a magical playhouse as the beans, gourds, and morning glories intertwine, grow, and bloom.

A sunflower bower is also great fun. David's was a square of giant sunflower seeds planted a foot apart all around the square but for a "door" space. When the sunflowers were up a foot or so, we planted pole beans and morning glories at the base of each sunflower stalk. The sunflowers were soon up seven feet high, with twining beans and flowers rapidly ascending the stalks. Tying the tops gently together a bit provided the roof. It was truly amazing in the late summer when it was covered with bean and morning glory vines, leaves, and flowers. A great place to play magic castles and to read special books.

We've also tried a dragon and dinosaur, created by forming old chicken wire onto steel reinforcing rod scavenged from a demolished bridge. Seven feet tall and covered by masses of thick pole green beans, they looked almost alive in the evening twilight. Next spring, we're going to try a flying dragon.

Simpler, yet exciting, projects include an arched garden gate complete with vivid blue morning glories and a small section of fence with brilliant scarlet runner beans climbing rampantly on it.

Remember, too, that the flowers of these climbing beans and flowers attract butterflies and hummingbirds in droves, adding to the magical aspect of even modest projects.

Once you and your children begin to get involved in gardening together, you'll discover that you have so much in common, from the joy of the first sprouting seeds to the juicy taste of

the super fresh harvest. And both parent and child will learn so many invaluable lessons, naturally, without stress and strain, that it is scarcely believable. I think God gave us children and gardens for the same reason: to learn of the joy of nurturing a living being and discovering the unique treasures brought by watching the garden, and the child, mature. △

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Book review

(Jackie Clay's book)

Veterinary Guide for Animal Owners

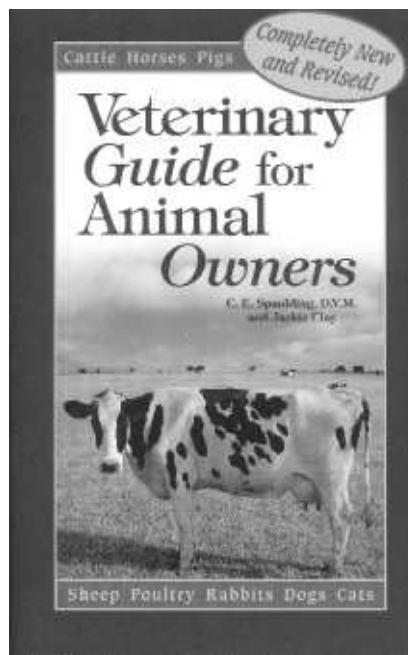
Finally, an up-to-date veterinary care book for the layperson that is thorough, easy to read, and covers cattle, horses, pigs, sheep, goats, rabbits, dogs, and cats. This well-illustrated book takes great pains to explain how to recognize symptoms of a wide variety of problems as well as how to treat them. It also tells you when a call to your veterinarian is necessary, as some problems cannot be handled by anyone else.

And, because the best "cure" for most problems is prevention, each chapter starts with the basics of the daily care of the animals discussed including tips for housing, feeding, restraint, breeding, and caring for the young.

There is a wealth of easily accessed information in this hefty manual that you will use over and over. In fact, one use can easily save not only the price of the book, but your animal's life as well. I used it just last week when our family dairy goat bloated. My veterinarian was out of town so I grabbed my well-used *Veterinary Guide*. In half an hour, our goat was treated and was up walking and happily asking for attention; the bloat was gone.

This book is a definite *must* for self-reliant people who want to better understand veterinary care their animals require from time to time and learn to do much more themselves. But it also stresses building a good relationship with your veterinarian and does *not* try to replace a veterinarian's care.

Many of us have several animals, from livestock to poultry and, of course, our much-loved pets. A



Veterinary Guide for Animal Owners will help us all take better care of them all by taking the mystery out of animal health care.

The authors are C.E. Spaulding and Jackie Clay. Spaulding studied veterinary medicine at Michigan State University and had a private practice for over 25 years. He also raised show Afghan hounds, horses, dairy goats, and cattle on his Minnesota homestead.

Jackie Clay is a trained veterinary field technician with years of experience in the field and in writing animal health care articles. She has written many articles on animal care, gardening, and the self-reliant lifestyle for *Backwoods Home Magazine* and her *Ask Jackie* column is now a regular feature in these pages.

Veterinary Guide for Animal Owners, C.E. Spaulding, D.V.M. & Jackie Clay. 432 pages, Rodale Press, hardcover. Available through *Backwoods Home Magazine* for \$25.95 (see page 90 to order).

— Diamond Joe Wolcott Δ

THE COMING AMERICAN DICTATORSHIP

PART IV

How the expanded use of Executive Orders has turned America into a dictatorship in limbo

By John Silveira

(This is the fourth installment in a multi-part series on the erosion of our constitutional government. The first three parts are posted at: www.backwoodshome.com, the BHM website.)

Dave, Mac, and I got back from breakfast, and Mac now slept in the big stuffed chair we have near the office front door while Dave and I worked on the magazine.

Mac is O.E. MacDougal, our poker playing friend who lives in southern California, and Dave is the guy who publishes this magazine.

For a couple of hours we were fairly quiet while Mac slept. People coming in from the other parts of the magazine tiptoed about. We all wanted to let him sleep.

Because we had just gone through deadline for the previous issue the office was slow and quiet, anyway. Even the phones seemed to have gone into slumber mode.

I sat at my desk and read from the basket that contains the new submissions while Dave went over cost figures for the issue that had just gone to the printer. There was little in the way of conversation, except for an occasional comment from me about one of the submissions or something from Dave about some business matter.

Suddenly a voice said, "Another thing we have to worry about are *Executive Orders*."

I looked at Dave and he looked at me. Then I peered around my monitor to where the stuffed chair sits. It was Mac.

"Do you want to sleep some more?" I asked.



John Silveira

He glanced up at the clock on the wall, then back at me and shook his head as he yawned.

"What about *Executive Orders*?" Dave asked.

"I was just sitting here, trying to wake up, and thinking about all the stuff we were discussing this morning. And *Executive Orders* are another thing that, unless controlled, carry the potential for a dictatorship in this country."

"What are *Executive Orders*?" I asked.

Mac stretched as he yawned, then he looked at me. "At the federal level, they're *Orders* issued by the President and they have the force of law. At the state level, they're *Orders* issued by governors and have the same effect in whichever state he or she is governor. But it's at the federal

level that they're a concern to us, as they're very often the way the President carries out the law."

"Clinton's issued quite a few *Executive Orders*," Dave said.

Mac nodded.

"How long have *Executive Orders* been around?" I asked.

"George Washington issued the first *Executive Orders*, though they were called *Executive Directives* and *Executive Proclamations* back then."

"What kind of *Orders* did he issue?" Dave asked.

"Well, he didn't issue many, but among them were declaring a Day of Thanksgiving not long after he took office. But it was just for that one year. The holiday we now observe as Thanksgiving didn't become an annual holiday until 1863 under Lincoln."

"Well, if *Executive Orders* can be a problem, who was the first President to abuse them?" Dave asked.

"Washington," Mac said.

"Washington, himself?" Dave asked in surprise.

"Yes. And he should have known better."

"What did he do?"

"One of his *Orders*, or *Executive Directives*, established a dangerous precedent and though there were those who denounced the Directive and how he had overstepped his bounds, I'm not sure anyone saw it as a dangerous precedent at that time."

"What was the *Directive* issued for?" Dave asked.

"There was a war going on in Europe..."

"There are always wars going on in Europe," Dave said.

"Yes. This particular one was between England, Prussia, Austria, and Sardinia—Sardinia was a monarchy at that time and not yet a part of the country we now know of as Italy. Anyway, Washington's Directive for-

bade Americans from consorting or trading with any of the combatants. He said that not only would the United States not offer protection to Americans who did, he also threatened to prosecute anyone who did.

"Now, I'm not going to comment on whether the intent of the Directive was good or not, because that's not the issue. What is, is that he issued an *Order* concerning the way American citizens were to conduct themselves."

"What's wrong with that?" I asked.

"He had no legal grounds either in the *Constitution* or in statute law passed by Congress."

I must have looked puzzled because then he said, "The President can't just make up laws whenever he pleases. Making laws is Congress's job. The President's job is to carry them out."

"The President can't make laws?" I asked.

"He's not supposed to. However, under our *Constitution* he may recommend legislation to the Congress. He can even veto legislation passed by Congress, though Congress still has the option to overrule him with a two-thirds vote. But he has no constitutional authority to create it."

"Because of this, at the time Washington issued that *Directive* it was recognized as a flagrant abuse of the executive authority."

"In effect, taking the law in his own hands," Dave said.

"That's exactly what he was doing. And that's the way many saw it."

"So how did Congress react?" I asked.

"They later enacted laws specifically to support this *Directive*."

"I'm confused," I said. "If they okayed it, what was wrong with him issuing it?"

"Congress was establishing yet another bad precedent by allowing the President to create law. I'm not sure if they should have issued a reprimand or what, but they should not have let this violation of the *Constitution* pass. This is important

because, as I said, under our *Constitution* it is not the President's prerogative to create legislation. That belongs solely to Congress. This separation of powers was intentional. Letting Washington create the laws he is supposed to execute is tantamount

"The accumulation of all powers, legislative, executive, and judiciary in the same hands, whether hereditary, self-appointed, or elective, may justly be pronounced the very definition of tyranny."

James Madison
Federalist Paper No. 46

to letting the police create the laws they're supposed to enforce."

"Not only that," Dave said, "but we don't want our laws made by just one man. That's akin to having a dictator."

"That's right," Mac said.

"So, what should they have done?" I asked.

"Like I say, I'm not sure. But they should have made it clear that laws do not originate with him. Creating laws is Congress's job."

"Then what should Washington have done to prevent trade with the combatants?" Dave asked.

"He should have approached Congress and recommended such legislation. It's his constitutional prerogative to do so. And he probably could have gotten it passed. But whether or not it was passed, by doing it the 'right' way Washington would have complied with the rules of how this country is supposed to be run and he would have been upholding his oath of office, to uphold the *Constitution*, an oath which is mandated by the *Constitution* itself."

"But in this case he didn't and both he and Congress created precedents that have rung down through the last two and a quarter centuries: that is, the President issuing *Orders* without

legal basis for doing so, and Congress rubber stamping them."

"And though creating laws this way wasn't repeated too often in the early days of our country, Washington's precedent has become a problem today as Presidents have asserted themselves with ever increasing frequency and vigor. Because of this, *Executive Orders* have become a tool that could be used to create a dictatorship. And I'm not saying their existence will force a dictatorship, but not stemming their abusive use right from the beginning makes their use to create a dictatorship more likely."

"Keep in mind that freedom has been rare throughout history. It's very fragile and, even today, most of the world's dictatorships are, on their surfaces, democracies."

"Well, the country was new back then," I said. "Perhaps Washington wasn't clear on the concept of how to use those *Directives*."

"No, he knew what part the President plays in our system of government. The rules are right there in the *Constitution*, the very document he helped draw up during the Constitutional Convention just two years before he took office as President. It was drawn up with a clear division of powers to prevent tyranny, and Washington knew that, too. And he wasn't just a delegate to that convention; he was its president. He knew what was going on."

"The only thing I can say in his defense is that he may have been shortsighted and perhaps he didn't realize his actions were creating an unhealthy precedent."

"So, what's the purpose of *Executive Orders* or *Executive Directives*?" I asked. "They must have legal uses, too."

"They do. They're lawful when they're issued in a lawful manner."

"Like what?" Dave asked.

"They're lawful when they deal exclusively with the Executive

Branch of the government. And that makes sense because the head of the Executive Branch should have the latitude in how he manages his department. That first Thanksgiving Proclamation was really issued just to those in the Executive Branch of our government, though Washington realized his lead would be followed by many others throughout the country.

"They're also legal when they're faithful to the *Constitution*."

"Can you give us an example of an *Executive Order* allowed by the *Constitution*?" Dave asked.

"Sure. Issuing pardons. The *Constitution* provides the President with the power to grant pardons under quite a few circumstances and they are often issued as *Executive Orders*. For example, in 1868, just before he left office, President Andrew Johnson, the man who became President after Lincoln was assassinated, pardoned all of those who participated in the Civil War, in any way, on the side of the South. This included people like Jefferson Davis, the President of the Confederate States of America, and Southern military leaders like Robert E. Lee. Johnson's pardons angered a lot of people in the North, but they were issued in accordance with the powers granted to the President by the *Constitution*. And such *Orders*, though we may not agree with them, follow the letter of the *Constitution*. They're lawful.

"A third circumstance that makes *Executive Orders* legitimate is when they are issued to carry out statute law as passed by Congress itself. It is the President, as head of the Executive Branch, who is responsible with carrying out the federal laws passed by Congress."

"Because that's the President's main job—executing the law of the land," Dave said.

"That's right," Mac said.

"Did Washington issue a lot of other *Directives*?" I asked.

"No, he didn't. And neither did the next 14 Presidents. From John Adams to James Buchanan, very few *Directives* or *Orders* were issued. In fact, most of the Presidents in the 19th century were really just the chief

"He shall from time to time give to the Congress Information of the State of the Union, and recommend to their Consideration such Measures as he shall judge necessary and expedient; he may, on extraordinary Occasions, convene both Houses, or either of them, and in Case of Disagreement between them, with Respect to the Time of Adjournment, he may adjourn them to such Time as he shall think proper; he shall receive Ambassadors and other public Ministers; he shall take Care that the Laws be faithfully executed, and shall Commission all the Officers of the United States."

Powers granted to the President
in Article II, Section 3
Constitution of the United States

clerks of the United States. They were there to do exactly what the *Constitution* charged them with doing—executing the law of the land. The people charged with creating the laws were those in Congress, and they were supposed to reflect the will of the people."

Lincoln's "dictatorship"

"Who's the President following Buchanan?" Dave asked. "You make it sound as if he's the one who changed things."

"Everything changes with Abraham Lincoln. When he became President the southern states, as they had threat-

ened to do if he was elected, began seceding, starting with South Carolina.

"You can make arguments as to whether or not the southern states could legitimately secede. On the one hand, you could say that if the states voluntarily joined the Union, that when they voluntarily chose to leave they should have been allowed to do so. On the other hand, you can make the argument that once a state joins the Union, and accedes to the *Constitution* being the law of the land, it cannot leave without the consent of Congress. And there are probably dozens of other arguments that support either side of the argument. But that's not the issue here.

"What is at issue is that, when the South seceded, Lincoln chose, for the next two and a half months, to run the country through *Executive Directives*.

"And the problem is not whether we should have fought to preserve the Union. The problem was the manner in which Lincoln proceeded to conduct himself. He grabbed power, acted illegally, violated the *Constitution*, and essentially ran the country as a dictator without consulting the Congress or the people. And, because Congress, when they finally did convene, all too willingly acquiesced, after the fact, to everything he had done, it became the model for future Presidents who justified autocratic rule by claiming 'war powers,' even when no declared war existed. He ran the country as more or less a dictator."

"In other words, if the South had to adhere to the *Constitution*, so did Lincoln," Dave said.

"That's right," Mac replied.

"But there was a war," I said.

"There is no war unless Congress declares war," Mac said. "That's also in the *Constitution*. And Lincoln hadn't convened Congress to do even that. In the two and a half months following secession there was certainly time to call Congress to convene, but

he never did it, nor had he intended to."

"What did people at the time say?" Dave asked.

"He closed northern newspapers that criticized his actions. He even had editors arrested. And when the Chief Justice of the Supreme Court, Roger Taney, stated that much of what Lincoln was doing was both illegal and unconstitutional, Lincoln's response was to have a warrant for Taney's arrest drawn. And though it was never served, it set the tone for Lincoln's presidency: Those who pointed out the illegality of his actions became his enemies.

"Lincoln, the Great Emancipator, conducted his presidency like a dictator.

"The good news was that, after Lincoln was shot, on April 14, 1865, four years to the day after the south had fired on Fort Sumter—and he died the next day—Congress quickly moved to reduce the executive powers of the President. This was done, in part, as a response to the presidency of Andrew Johnson who opposed Congress's moves to punish the South for the war. And, like I said, Johnson issued an *Executive Order*, well within the scope of his constitutional powers, when he signed a blanket pardon of those who had instigated or participated in the war on the side of the Confederacy. It angered a lot of northerners, but it was a smart move that allowed the country to put the war behind it.

"As it was, wounds from the war lasted for generations. But had spiteful northerners had their way, and attempted to punish the south, we may have wound up with a guerrilla war that lasted generations."

"Would Lincoln have issued the same kind of pardon Johnson had, and pardoned everyone who fought on the side of the South?" Dave asked.

"It's difficult to imagine what direction the country would have pursued

had Lincoln lived. One could make the case that he would have done the same things Johnson had done and tried to ensure the national healing. On the other hand, you could make the argument that he would not soon have relinquished the near-dictatorial powers he had assumed within weeks of his first term. It's just one of those things we'll never know."

"Did Presidents after Lincoln abuse *Executive Orders*?" Dave asked.

"Lincoln's presidency was the high point of power in the presidency for the entire 19th century. For the next 35 years Presidents more or less stayed within the limits of their offices as dictated by the Founding Fathers, though it's not clear if it was because the men we had serve in the White House were different from those who serve today or if it was because Americans were different back then and wouldn't have tolerated it. It's probably a combination of both.

Teddy Roosevelt

"But with the dawn of the 20th century, that all changed.

"Theodore Roosevelt took the view of an activist President and he exercised more power than any President before him, other than Lincoln. He issued more *Executive Orders* than all 25 Presidents who preceded him, combined. In his own words he called the White House a 'bully pulpit,' and he was intent on using it as such to force through his programs.

"His view was that instead of looking into the *Constitution* and the laws passed by Congress to see what he was allowed to do as the Chief Executive of the United States, he was allowed to do anything unless it was specifically denied to him. This was a whole new twist on the *Constitution*. It ignored the words of the 10th Amendment, which says, 'The powers not delegated to the United States by the *Constitution*, nor prohibited by it to the States, are

reserved to the States respectively, or to the people.'

"One of the things he did that had never been done before was to create a national police force, the FBI, by *Executive Order*. It's something the Founding Fathers never wanted and Congress had always rejected the concept."

"Why?" I asked.

"They were afraid of a strong central government, and a national police force in the hands of the President was absolutely not something they wanted."

"Why did they let him create one then?"

"Though he had political enemies, Congress rarely tried to hold him to the description of his job but instead gave him a free rein in almost all of his actions."

"Aside from how they might have felt about a national police force, were the other *Orders* he signed for good things?" I asked.

"Does it matter? Good, bad, indifferent. Let me ask you: Should we excuse the police for warrantless searches whenever they turn out to get a guilty verdict? How about torturing confessions out of people as long as you catch a guilty person now and then?"

"So, you're saying...?"

"I'm saying it doesn't matter whether the cause is good, bad, or indifferent. There are constitutional procedures that are supposed to be followed, and making exceptions because you believe your current cause is 'right' is setting a dangerous precedent. Letting a President abuse his powers because you feel he'll be a benevolent dictator is somewhat less than prudent."

I didn't have a response for this.

"Was the way he conducted himself as President taken as precedent?" Dave asked.

"The two Presidents to follow him, Taft and Wilson, both issued numerous *Executive Orders*. And like

Roosevelt they both issued more than all of the other Presidents of the 19th century, excluding Lincoln. But it was Wilson who used them more indiscriminately.

Wilson's "emergencies"

"In 1916, while running for a second term, he campaigned on a platform to keep the United States out of the war that was going on in Europe, though historians now know that all along he was making plans to get us involved.

"Then, just three months after his election, he began creating federal agencies. And I believe, other than Roosevelt's creation of the FBI, he was the first President to bypass Congress and create federal agencies by using *Executive Orders*."

"What agencies?" Dave asked.

"Among them were the Grain Administration, the Food Administration, the War Trade Board (though we weren't in the war, yet), and the Committee on Public Information. And, not long after we entered the war, he had rounded up those who spoke out against the war until some 5,000 people were put behind bars."

"People were imprisoned for speaking out against the war?" I asked.

"Oh, yeah. You didn't monkey around with the guy who had once been a college professor at Princeton.

"He was also the first President to declare a 'national emergency,' because of the war in Europe, then use the emergency to assume powers not granted by either the *Constitution* or Congress."

"But we were at war—World War I," I said.

"No. He declared the emergency two months before Congress declared war.

"But, as happened after the death of Lincoln, when Wilson was leaving office—in fact, it was the day before Warren Harding took the oath of office—Congress repealed most of

the *Orders* by which Wilson had granted himself power.

"The next two Presidents, Harding and Coolidge, did their thing with *Executive Orders* without doing too much damage. Then there was Hoover. He gets knocked for doing nothing when the Depression started. It's a bad rap because, the fact is, one of the reasons the Depression got so bad was because he monkeyed with the economy more than he should have.

"He issued numerous *Executive Orders*, many dealing with the Depression, and many economists now say that it was because he would not let the economy straighten itself out, as it had after every other depression, that the Depression deepened and, of course, Hoover got booted out of office.

The endless Depression

"FDR, who defeated him in the 1932 election, ran on a platform of fiscal responsibility and restraint. But, in his inaugural address, he gave a hint of what he was about to do.

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"He didn't bother citing the source of these 'broad executive powers.' He just assumed, like his distant cousin, Theodore, that he was allowed to do anything not specifically denied to him by the *Constitution* or statute law. Though even statute law would become suspect when, during World War II he threatened Congress that, unless they repealed certain legislation he felt stood in his way, he would assume dictatorial powers."

Dave looked real surprised.

"But that came later. However, in those first days of his first term, he was also the first President to use the word 'war' in referring to a domestic program. He said he was going 'to wage a war against the emergency', meaning, of course, the Depression."

"Succeeding Presidents would, of course, wage 'wars' against poverty, a drugs, and almost everything else. But it isn't an accident that the term war is used, because it is citing

war powers acts that Presidents grant themselves these authorities.

"But, as I said, the broad executive powers he was alluding to don't exist in the *Constitution*. You can look. You won't find them there. And he didn't bother to consult with Congress. Two days after his inaugural speech he closed the banks.

"But Roosevelt had to force the issue so he could end the Depression," I said. "He saved capitalism."

"What are you talking about?" Mac asked.

"Well, we were in the throes of the worst Depression in our history, and Roosevelt had to do something to save us."

Mac smiled a little for a moment, then he stopped. "Franklin Roosevelt has several distinctions. Among them is that he served as President longer than any other man to serve in that office. Even more remarkable is that he never served even one day in office over a stable economy. He oversaw either a depression economy or a wartime economy for over 12 years. Imagine if Clinton's entire eight years in office were during a depression. Would you be saying that he saved us? Well, FDR served eight years, proposing one program after another and even threatening to stack the Supreme Court when they stood in his way..."

"Shades of Lincoln when he threatened to arrest Taney," Dave said.

"Yes. But not only did he never see a good economy during his presidency, many economists blame him for the Depression lasting so long."

"Why?" Dave asked.

"Consider this: if any of his programs were working, not only can you not explain why the Depression dragged on year after year, but you can't explain why it deepened in 1938, five years into his programs.

"He initiated scores of work programs and economic 'solutions' along with a couple of thousand *Executive*

Orders, yet the Depression continued without the economy getting any better.

"At the same time, on the other side of the world, similar programs were being forced on the Soviet Union's population, and they were resulting in mass starvation. Of course, no one bothered to point this out.

Before he enter on the Execution of his Office, he shall take the following Oath or Affirmation:—"I do solemnly swear (or affirm) that I will faithfully execute the Office of President of the United States, and will to the best of my Ability, preserve, protect and defend the Constitution of the United States."

Presidential oath
Article II, Section 1
Constitution of the United States

"No, Roosevelt didn't end the Depression. Not only did he not end it, his meddlesome policies were dragging the United States toward the kind of economies we saw in Eastern Europe following World War II.

"What was he supposed to do, nothing like Herbert Hoover did and watch the country plunge deeper?" I asked.

"I told you, the idea that Hoover did nothing is a myth. He tinkered with the economy endlessly and had no more success than FDR would have later.

"And as I said, we would have been better off if both of them had done nothing."

"I can't believe that," I said. "A lot of economists have said what he did was necessary."

"But none of those economists explain why what he did didn't end the Depression."

"This isn't about the Depression," Dave said. "It's about *Executive Orders*. Can we stay on subject?"

Mac laughed. "Sure."

"So FDR started issuing *Orders* right away?" Dave asked.

"Yes, and he used as his authority the *Trading with the Enemy Act* of World War I. This despite the fact that that the *Trading with the Enemy Act* in no way empowered the President to govern transactions between American citizens within the confines of the United States, and that act was only enforceable during a declared war. In 1933 the United States was not at war with anyone.

"But three days later, Congress passed legislation amending the *Trading with the Enemy Act* and thereby not only authorized Roosevelt's actions but made all 'emergency actions' taken in the future, by either the President or the Secretary of the Treasury, legal and binding as long as they were made pursuant to the amended *Trading with the Enemy Act*."

"In other words, they took themselves out of the loop," Dave said. "There wasn't going to be any more legislative process when it came to the Depression."

"That's right. Rather than assuming their responsibilities, as spelled out in the *Constitution*, they gave FDR carte blanche powers not included in the *Constitution*. And those powers are on the books to this day.

"Roosevelt then went on an *Executive Order* bender and became the model for all recent Presidents who wish to trample on constitutional limits imposed on the President. In fact, most people seem to be blithely unaware that many of the *Executive Orders* passed today start out with the declaration of a 'state of emergency.' Go out on the Net and read some of the recent ones. Their sole basis for legitimacy is that the President has declared an emergency, whether anyone else sees it that way or not."

"And just as Theodore Roosevelt had issued more *Executive Orders* than all of the Presidents before him combined, FDR issued more *Executive Orders* than all of the Presidents who have succeeded him, combined, so far."

"All the Presidents from Truman to Clinton?" Dave asked.

Mac nodded.

"Did he ever trample on the *Bill of Rights* with *Executive Orders*?" Dave asked.

"Of course he did. He seized businesses before this country entered World War II to settle labor disputes. Supposedly, this was done to help battle the Depression and to prepare for World War II. Meanwhile, the Depression dragged on. And nowhere in the *Constitution* is there a phrase allowing the President to seize private property."

"But what about private rights? Did he issue any *Orders* that took away personal rights?" I asked.

"Businesses are private property. Seizing them was an infringement on our rights. But his most infamous *Order*, and the most infamous *Executive Order* until John Kennedy took office, was E.O. 9066. It authorized the United States government to round up American citizens of Japanese descent, in a direct violation of their constitutional rights, and throw them into the most recent version of American concentration camps."

"What do you mean 'most recent version of concentration camp?'" I asked.

"Well, since we first started forcibly moving Indians onto reservation."

"You're calling Indian reservations concentration camps?" I asked.

Mac didn't say anything for a moment. He stifled another yawn. Then he said, "*The Northwest Ordinance of 1787* promised that the Indians would live undisturbed on lands west of the Appalachians. The Ordinance became embodied in one

of the first acts of Congress under the new *Constitution*, in 1789. Of course, both the Ordinance and the declaration of Congress contained loopholes for us to unilaterally change things and, with the *Indian Removal Act of 1830*, we acted on these loopholes and systematically began pushing the Indians onto reservations to which they were to be confined. This country is now dotted with them."

"I still wouldn't call them concentration camps," I said. "We usually think of concentration camps in reference to the Nazis in Germany during World War II."

Dave had grabbed the dictionary and was looking through it. Suddenly he said, "Well, according to the *Merriam-Webster Dictionary*, the term 'concentration camp' entered our language long before World War II. It says 1901. So the Nazis didn't invent them." Then he slammed the book shut and put it down. "But this isn't about Indians, either," he said. "It's about *Executive Orders*. I want to hear more about them."

FDR attacks the Court

Mac yawned again. But this time he had trouble stifling it.

"Did anyone do anything to stop FDR?" Dave asked.

"The Supreme Court tried to when they ruled several pieces of New Deal

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legislation unconstitutional, and that's when Roosevelt threatened to stack the Court."

"What do you mean by stack it?" I asked.

"He was annoyed that the Court was overruling his Acts and he proposed to Congress that they pass a bill that would let him appoint extra judges. He wanted just enough to offset the judges that opposed his programs."

"Can Congress change the number of judges that sit on the Court?" I asked in a surprised voice.

"There is nothing in the *Constitution* fixing the number of judges on the Court. That number is determined by Congress. It had varied between six and ten until the current number of nine was set in 1869, and it hasn't been changed since."

"So, what happened?"

"Several things happened. One, which surprised Roosevelt because he

was banking on his popularity, was that the public came out overwhelmingly against his stacking the Court. In many ways, it's a good sign because it shows what the American people can do when they act in a concerted manner. And no President has even suggested stacking the Court since then.

"But, on a darker note, several of the justices, instead of standing their ground, retracted or changed their votes on key issues."

"He intimidated the Court," Dave said.

"Yes, and the Court has been rather compliant with the wishes of the President and Congress ever since."

"Was the Court mostly Republican?" I asked.

"Seven of the nine justices had been appointed by Republicans."

"Then maybe he was right in wanting to add more justices to the Court," I said.

"Yes, maybe he was." Suddenly, he yawned very deeply. "And maybe the next time one or the other of the political parties controls the House, the Senate, and the White House, if the Supreme Court overrules anything they do, they can just appoint more judges so the vote goes their way. And if one party has enough members in the House and Senate and they don't want a President in the other party, they can impeach him. And..."

"I see what you're saying," Dave said. "In a round-about way you're saying 'If you're going to force things through by politically manipulating the system, then what's the point in having a system of checks and balances?'"

"That's what I was hoping you'd conclude," Mac responded.

"And if you start concentrating too much of the power in any one branch of the government, a system of checks and balances can't work," Dave added.

Mac yawned again. "That's right."

"But why did Roosevelt choose intimidation?" Dave asked.

"Perhaps he really believed his legislation could end the Depression. Or maybe he saw the truth, that what he had done so far wasn't working and he was getting desperate. But, whatever it was, he was at the height of his popularity and believed he could do pretty much anything he wanted. Intimidating the court was one of those things."

"How could he have been so popular," I asked, "if the Depression was dragging on, as you say?"

"I think that's a long story that includes a desperate population, a bad economy, the illusion that bad political action is better than no action at all, and ultimately a world war.

"But keep in mind that the Depression had spread around the world and strong leaders were wildly popular almost everywhere. It was a time when Hitler had risen to his heights in Germany, as had Mussolini in Italy, and both were as popular in their countries as FDR was here. Yet the Depression continued there, too. So maybe it shouldn't be a surprise that Roosevelt was riding the crest of his wave of popularity, though there were no improvements evident in the country."

Dave tapped his desk. "This isn't about the Depression," I want to hear more about the dangers of *Executive Orders*," he said.

Mac yawned again. "Just a second," he said, and he closed his eyes. "I love this chair," he added.

"It's the one we all sleep in," Dave said.

"Anyway, no other President wielded *Executive Orders*, or acted the part of the autocrat, as much as FDR did. As I said, in the end, little if anything he did helped end the Depression. But what he did do was entrench the power of *Executive Orders* and weaken the constitutional restraints our Founding Fathers had wisely placed on the presidency."

He put his head back again and closed his eyes.

Dave said, "You said something about Roosevelt signing the most infamous *Order* until John Kennedy took office. What *Orders* did Kennedy sign."

"We've got to talk about Truman, first." He still had his eyes closed.

"What do you mean we have to talk about Truman."

"Harry Truman had his run-ins with the Supreme Court, too, and it looked as though the Court may finally stand up to the Presidents and their *Executive Orders*."

He still had his eyes closed and we waited. And we waited.

...then, Mac fell asleep again.

"Is he asleep?" Dave asked.

I stood up at my desk so I could see clearly over my monitor. "Yes," I said.

"Wake him up," he whispered.

"No, you wake him up."

I looked at Dave. He looked at me. We were going to have to wait for Mac to finish his story on *Executive Orders*. Δ

In the July/August 2001 issue the discussion between Mac, John, and Dave on how Presidents unconstitutionally bypass the legislative process with *Executive Orders* continues: how the courts seemed to finally take a stand, how they ultimately ruled on their legality, and how the most dangerous ones may be the ones signed in the last 40 years.

In future issues they will discuss how the government will eventually control the Internet, how the conversion of the military from a "citizen army" to a professional army is a danger to us all, and, though we don't like to admit it, why the United States is, in reality, now a fascist country.

Build with *beautiful field stone*

By Delores Wilgenbusch

I have always admired the natural beauty of rocks, so when it was obvious that our dirt cellar needed sturdier walls I decided to try building them with field stone. The cellar wasn't that large, but once I started it was working out so well that we made it big enough to hold big shelves to hold our preserves and potato and root vegetable bins.

John and the boys helped carry out dirt from the cellar and brought rocks from the rock piles out in the field.

The cement mixture I used was 1 part dry cement to 4-5 parts coarse sand or gravel for the foundation and 1 part dry cement to 3 parts finer sand for around the rocks. Add enough water to make cement that is not runny, so that it can be handled and will stay in place when worked in around the rocks. When I write 1 part cement to 4-5 parts coarse sand or gravel that simply means for every



South side of house also showing greenhouse

batches of bread and that is with my hands, so rubber gloves are a must. Never handle wet cement with your hands bare.

Have a level to make sure the wall is going up reasonably level or straight and a brush for washing the excess cement off the rocks and the wheelbarrow after each time it is used to avoid a build-up of cement.

It is necessary that you start out with a lot of different shaped and sized field stones. The main ones that

around the back of the main building rocks.

I found that once I started gathering building rocks, I couldn't pass any rocks without checking to see if they would look good on my wall.

Once I have the equipment ready and enough rocks to get started I put in a layer of foundation cement around eight inches wide and around eight feet long along the base of the wall. Now the first layer of rocks can be put in with the rough egg size stones and cement tucked in all the spaces left around each stone. For the second row place each stone where the two bottom ones meet (like bricks). Not only does it look nice, but it won't crack as easily. Each stone used should sit in its place without support and then it can be removed, cement added and replaced. Rocks should never be propped up with sticks, etc.

Don't do any more than two layers at a time or the wall will buckle from the weight. Allow the cement to set for two to three hours, then the excess cement can be washed off the stones. I use a wetted rubber-gloved hand to smooth around each stone. If the washing and smoothing is done too early or when the cement is wet and soft, it will wash away and not smooth down nicely.

Whenever possible we worked on the walls and by fall it was ready for



North wall of house

shovel full or pail of dry cement, add 4 or 5 shovels full or pails of coarse sand or gravel.

For equipment I used a wheelbarrow for mixing the cement in. I found it easier to mix the cement using the same method as when I mix my large

are used to form the wall should have one side that has a fairly flat side. Stones with two flat sides will be used for corner stones around doors or windows in the basement and on the house corners. You will also need a lot of egg-size stones to work in



North side of house
storing our garden vegetables and preserves.

Once the rock cellar was completed, we liked it so much that we thought the outside of our log house, which was badly in need of siding anyway, might look more attractive if it too was covered over with field stones. So we put on a layer of styrofoam (for warmth), then the stone.

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Now that we were working outside rather than in the cellar, we had to consider that the cement would set faster so the rocks would

have to be washed sooner and also the cement smoothed around the rocks. Cement must be kept from drying too quickly, so we covered ours with plastic and an old blanket weighted down with rocks. Once the cement sets it can also be sprayed with water if it is drying too quickly. If cement dries too fast or is allowed to freeze, it will crumble easily. If for some reason the work on the stone wall has to be delayed and the cement becomes completely dry, the work area will have to be soaked until it has the wet cement look again so that the fresh cement will adhere better.

We finished the house in 1984, which was four years from the time we started the cellar. The rock walls are as attractive and solid as when we finished them. They are beautiful and we never tire of them.

Building with field stone may look a lot more difficult than it is. I had 10 children at home when I was working with the rocks, so I could only do a wheelbarrow of cement in the evening as I also had all of my other

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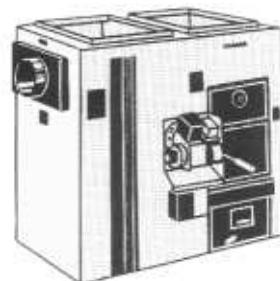
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work to do. That is why it took me four years. I still enjoy polishing small stones that I am constantly looking for. There are certain types that polish so beautifully. I also am still adding rocks to the cementless fence. That is an interesting project. Doing any thing with rocks is inexpensive, but it can sure change anything that isn't too attractive into something that is quite classy. Δ

THE IRREVERENT JOKE PAGE

(Believing it is important for people to be able to laugh at themselves, this is a continuing feature in *Backwoods Home Magazine*. We invite readers to submit any jokes you'd like to share to *BHM*, P.O. Box 712, Gold Beach, OR 97444. There is no payment for jokes used.)

Q.: How do you get someone with a liberal arts degree off your porch?
A.: You pay him for the pizza.

Q. What do the men in a singles bar have in common?
A. They're all married.

A man told his doctor that he wasn't able to do all the things around the house his wife wanted him to do. When the examination was complete, he said, "Now, Doc, I can take it. Tell me in plain English what is wrong with me."

"Well, in plain English," the doctor replied, "you're just lazy."

"Okay," said the man. "Now give me the medical term so I can tell my wife."

A blonde goes for a job interview and the interviewer starts with the basics. "Miss, would you please tell me your age?"

The blonde hesitates then starts to count carefully on her fingers for half a minute before finally saying. "I'm...ahh...22."

The interviewer asks, "And how tall are you, please?"

The young lady stands up, pulls a measuring tape from her handbag, steps on one end and brings the other end to the top of her head. She checks the measurement and announces, "I'm five foot two."

This isn't looking too good so the interviewer goes for the real basics; something she won't have to count, measure, or lookup. "Just to confirm for our records, what is your name please?"

The blonde bobs her head from side to side for about fifteen seconds, mouthing something silently to herself. Finally, she says, "My name is Jenny."

The interviewer is perplexed, but finally he asks, "What were you doing when I asked you your name?"

"I was just running through that song."

"What song?"

"You know, 'Happy birthday to you, happy birthday to you, happy birthday dear...'"

Q.: Why aren't civil servants allowed to look out the windows in the morning?

A.: Because they won't have anything to do in the afternoon.

Walking into the bar, Harvey said to the bartender, "Pour me a stiff one, Eddie. I just had a fight with the little woman."

"Oh, yeah?" said Eddie. "How'd this one end?"

"When it was over," Harvey replied, "she came to me on her hands and knees."

"Really? Now that's a switch. What did she say?"

"She said, 'Come out from under that bed, you gutless weasel.'"

An old preacher was dying. He sent a message for an IRS agent and his lawyer, both church members, to come to his home.

When they arrived, they were ushered up to his bedroom. As they entered the room, the preacher held out his hands and motioned for them to sit on each side of the bed. The preacher grasped their hands and sighed contentedly, smiled, and stared at the ceiling.

For a time, no one said anything. Both the IRS agent and lawyer were touched and flattered that the old preacher would ask them to be with him in his final moment. But they were also puzzled; the preacher had never given them any indication that he particularly liked either of them. They both remembered his long, uncomfortable sermons about greed, covetousness, and avaricious behavior that made them squirm in their seats.

Finally, the lawyer said, "Preacher, why did you ask the two of us to come?"

The preacher mustered up some strength, then said weakly, "Jesus died between two thieves, and that's how I want to go, too."

You might be a redneck if rather than drinking the sacramental wine at church you bring your own.

You might be a redneck if you let your 12-year old daughter smoke in front of her kids.

You might be a redneck if you've been married three times and still have the same in-laws.

You might be a redneck if anyone in your family ever died right after saying "Hey, y'all watch this!"

George comes home from an exhausting day at work, turns on the television, and plops down on the couch. He yells to his wife, "Get me a beer before it starts."

She sighs and gets him a beer.

Fifteen minutes later, he says, "Get me another beer before it starts."

She looks cross, but gets another beer and slams it down next to him.

He downs that beer and two minutes later says, "Quick, get me another beer, it's going to start any minute."

Now she's furious and she yells, "Is that all you're going to do tonight? Drink beer and sit in front of that TV? You're nothing but a lazy, drunken, fat slob, and furthermore..."

George sighs and says, "It's started..."

Three guys go on a hunting trip—a Texan, a Californian and a Coloradan. That first night they were sitting around a nice campfire. The Texan reaches into his custom tooled leather saddlebag, pulls out a bottle of Jack Daniels, tears the seal and takes one healthy swallow. He throws the rest of the bottle in the air grabs his gun and BAM. Turns around and says, "Hell, boy, in Texas, we got more whiskey than we know what to do with."

The Californian then reaches into his Nike designer backpack, pulls out a bottle of red wine, pulls the cork, and takes a swallow. He also throws the bottle into the air and shoots it. Then he says "In California we have more wine than we know what to do with."

The crusty old Coloradan reaches into his styrofoam cooler, pulls out a Coors Silver Bullet, pops the tab and drinks the whole thing down in one pass. He then puts the can down, grabs his gun and shoots the other two guys. After one hearty belch, he says "In Colorado we got more Texans and Californians than we know what to do with."

Police in Radnor, Pennsylvania, interrogated a suspect by placing a metal colander on his head and connecting it with wires to a photocopy machine. The message "He's lying" was placed in the copier, and police pressed the copy button each time they thought he wasn't telling the truth.

Believing the "lie detector" was working, the suspect confessed.

Q. What's the difference between a Northern zoo and a Southern zoo?

A. Northern zoos have a little placard on the front of each cage that has a description of the animal inside. Southern zoos have a description, but it's accompanied by a recipe.

Kids' advice on love

WHAT DO MOST PEOPLE DO ON A DATE?

"On the first date, they just tell each other lies, and that usually gets them interested enough to go on a second date."

— Mike, 9-years old

IS IT BETTER TO BE SINGLE OR MARRIED?

"It's better for girls to be single but not for boys. Boys need somebody to clean up after them."

— Lynette, 9-years-old

WHAT EFFECT DO GOOD LOOKS HAVE ON LOVE?

"If you want to be loved by somebody who isn't already in your family, it doesn't hurt to be beautiful."

— Jeanne, 8-years-old

"It isn't always just how you look. Look at me, I'm handsome like anything and I haven't got anybody to marry me yet."

— Gary, 7-years-old

"Beauty is skin deep. But how rich you are can last a long time."

— Christine, 9-years-old

WHAT DO YOU THINK OF LOVE?

"I'm in favor of love as long as it doesn't happen when *The Simpsons* is on television."

— Annita, 6-years-old

"Love will find you, even if you are trying to hide from it. I have been trying to hide from it since I was five, but the girls keep finding me."

— Bobby, 8-years-old

HOW DO YOU MAKE SOMEONE FALL IN LOVE WITH YOU?

"Don't do things like have smelly, green sneakers. You might get attention, but attention ain't the same thing as love."

— Alonzo, 9-years-old

"One way is to take the girl out to eat. Make sure it's something she likes to eat. French fries usually work for me."

— Bart, 9-years-old

HOW DO YOU MAKE LOVE LAST?

"Spend most of your time loving instead of going to work."

— Tom, 7-years-old

"Be a good kisser. It might make your wife forget that you never take out the trash."

— Randy, 8-years-old

Q. Why is it so hard for women to find men who are sensitive, caring, and good looking?

A. Because those men already have boyfriends.

PICKING AND PRESERVING THE WILD PLUM

By Bill Weekes

The wild plum is a fickle fruit, ripening any time between late spring and late summer. It comes in a bunch of colors, shapes, and sizes. Some are sweet, some tart. And it boasts one of the highest food values—20% carbohydrate content—of any other fruit.

From late May to midsummer, wild plums (*Prunus americana* and other species) are ready to be picked. Throughout the U.S. there are about 30 varieties of native wild plums. Additional natural hybrids add to the complexity of variation and dilution of "purity." In the Northern Hemisphere there are 2,000 variations of these main varieties.

Some plums are the size of cherries, some the size of golf balls. Wild native types range $\frac{1}{2}$ to $1\frac{1}{2}$ inches in diameter. And skin color is diverse: deep vivid red, glowing orange, bluish crimson, bright red, bright yellow, dark yellow. All are smooth skinned, hard-pitted dups, with yellow juicy "meat." Shapes may be round, oval, conical, or heart-like.

Ripe plums drop into one's hand at a finger's slightest provocation, and yield an elastic sensation to the squeeze of pinching fingers. Many times ripened fruits which are still warmed by the sun, and yet untouched by the ravages of decay, can be retrieved from the ground.

Most of the harvest for jelly should be ripe.

Plums that do not separate easily from the twigs are not fully ripened. However, a few of these should be included in your harvest to add a tang to one's batch and, more importantly, natural pectin, the substance that makes jellies jell.

While picking plums, exercise caution. The twigs of these scrubby trees are covered with dull pointed thorns. The fruit itself grows singly, not in clusters as do cherries.

Six pounds of plums should make four or five pints of crimson jelly or jam. After they are washed and pitted, the plums should be placed in a pan with two cups of water, covered with a lid and put on a stove on "high" and occasionally stirred until the mixture boils. The mush should be stirred while the fruit is softening up. The process shouldn't take longer than 30 minutes.

Once "mushified," the plum residue should be left to cool and then poured into a jelly bag which has been draped over a colander inserted into another pot. The plum mush should be left to drip through the jelly bag until all the juice has been collected in this second pot. This may take several hours. Letting it drain overnight may be practical. One should not squeeze the plums to get the juice out. Doing this clouds the jelly.

Plums may be kept in the refrigerator for a few days if a delay in pre-



serving them is necessary. This may occur when there has been a limited daily harvest because of slow ripening of the crop. The delay will enable one to replenish the harvest on subsequent days.

To ensure jelling, one box of prepared fruit pectin (1 $\frac{3}{4}$ dry ounces) should be used for every six cups of the cooked plum juice. To begin converting the juice to jelly, the juice should first be brought to a boil, then the pectin added. Next, 7 $\frac{1}{2}$ cups of sugar should be added and the mixture stirred to avoid scorching. Bring it to a boil again and keep it boiling for a minute before removing the pan from the heat.

Foam should be skimmed off the top before the remaining hot juice is poured into jars. Jars should be heated beforehand, either by scalding or by heating them in an oven at 200°F for about 15 minutes.

Some homemakers may prefer to seal the preserves in paraffin, or seal with domed lids according to package directions.

The native wild plum, made into preserves as early as Colonial times, is not important commercially in this country, but it is tasty nevertheless when homemade. Δ

Tails of the marsh

By Maureen Gilmer

Perhaps the least known, yet the most fascinating aspect of America's wetlands is the plants that grow there which have been used by people of many cultures for materials, fibers, and food. The two most easily identified and versatile share similar names: cattail and horsetail. When you discover the many ways these two ubiquitous reeds are used, you will never again see wetland vegetation as just a mass of rotting, tangled weeds.

Common cattail

Typha latifolia

Wherever there is water, along riverbanks, poorly drained ground, and at the margins of ponds or lakes, there will always be the cattail. It's easy to identify by the distinctive cigar-shaped seed heads which rise on long stalks above the bladed foliage. When mature, this seed head disintegrates into tiny seeds attached to tufts of cottony fibers called *cattail down*. It is so light that even the slightest wind whisks away the seed, and if it lands upon moist ground, which is its preferred condition for germination, the tufts collapse, insuring the seed remains there to sprout.

Native American women often bound their babies to cradleboards which hung on the mother's back, leaving her hands free to work. Diapers as we know them were not part of the material culture, but cattail down, with its great absorbency, was packed around the child's body instead. It could be arranged easily, then held securely in place by wrapping. Once soiled, the material was

discarded and replaced with new down, which grew around nearly every natural waterway. This is one of the fascinating examples of how human beings, long before the coming of the white man to North America, played active roles in seed migration of native plant species.

Cattail down was also used by the early settlers, and perhaps white babies were also bound in cattail when there were shortages of cloth on the frontier. Down proved to be excellent stuffing in lieu of feathers for any purpose from pillows to upholstery. It made fine insulation against heat loss in walls. Down was also wetted and packed between the stays of wood barrels as caulking. The seed heads themselves, if harvested before disintegration, are tightly packed into a dense cigar shaped mass which is ideal for storage. A seed head may produce a volume of fluffy stuff roughly 20 or more times its size.

Early settlers also discovered the large hollow stems of the seed stalks made perfect disposable candle molds because the fibrous material could be peeled away easily from the hardened candle wax. Even into the 20th century, people used the entire bloom stalks for torches to light nighttime political rallies and holiday speeches. The cattail stalk was cut with a long staff, the end dipped in coal oil until saturated, then set aflame. The fibrous, long-bladed leaves were twisted into cord and used in chair caning.

One of the greatest values of cattail is as a food plant. This is important because cattail grows in lands unsuited to traditional agriculture. The primary food sources are the rhizomes

(see illustration) and root stocks which contain up to 30% sugar and starch with nutritional values similar to potatoes. During World War I, the German people faced starvation, but fortunately they found plentiful cattail roots to eat, which saved many lives. Cattail has long been collected by Native Americans, who prepared the fresh roots or dried and stored them for later use. They ground the dry roots into flour which was combined with cattail pollen and seeds, yielding bread, pudding, and pancakes. The roots are so rich in sugar, the Iroquois boiled them down into syrup used to sweeten other foods such as corn meal pudding.

To some, cattails represent a new, yet old food source which can be of great value in developing countries. Plant scientists have tested the cattail and found that plants can be cultivated using certain methods to make them far more productive. One acre of cattails planted for the starchy roots produced approximately 10 times the harvest of the same area planted to potatoes. The expected yield of cattail root averaged 140 tons per acre. Researchers have also fermented the flour to produce ethyl alcohol.

For a taste of fresh cattail in spring, simply pull up a sprouting green root stock, peel away the layers at the base of the stalk, and you'll find a tender white core. When eaten fresh it tastes similar to heart of palm. This core is delicious chopped and added directly to salads, or you can have larger pieces steamed and served with herbs and butter as you would asparagus.

To collect cattail for a unique wild addition to your home cooking, dig

out the largest mature root stalks with their attached rhizomes in the fall. In spring, gather the newly sprouting younger plants to harvest the fresh inner cores. When plants develop flowers, gather the pollen, which is said to contain protein, sulphur, phosphorus, carbohydrates, sugar, and oil. Mix it with equal portions of whole wheat flour and yeast to create a suitable bread dough.

Beware: When gathering cattails, as with any wild food, avoid wetlands which may be polluted. Public works departments and farmers sometimes try to control cattail invasions into certain waterways by treating them with herbicides.

Horsetail

Equisitum spp.

You'll find them growing along roadsides, drainage ditches, and wet meadows in just about every state from the Canadian border to Mexico, and they have even shown up in the medieval gardens of England. Horsetail is one of the few living fossil plants, as it reached an evolutionary dead end about 300 million years ago.

Horsetail grass is not really a grass. Close inspection reveals that it grows



This is typical of cattail reeds before blooming in the spring. Soon tall spikes will rise above these leaves to flower and develop into the cigar shaped seed heads.

in long, hollow reeds about the diameter of a pencil, but segmented like bamboo. This plant is primitive and reproduces by spores, similar to the ferns. There are two types of rods produced by this plant: one is fertile and topped with a cone-shaped *sporangium* (see illustration). The infertile rods bear the characteristic needle-like foliage similar to a horse's tail, hence the Latin root of the genus: *equus* meaning horse, and *seta*, a bristle.

This inhabitant of wetlands is unique because the cell walls of its water carrying vessels are made rigid by high amounts of silica in the cell walls. Historically horsetail stems have been cut and bundled into scrub brushes because of their durable and abrasive, yet flexible qualities.

During the middle ages in Europe it was called "pewterwort" because the abrasive silica shined pewter implements without scratching. It was used for renewing the surfaces of wooden implements as well. On the American frontier, they were "scouring rushes," bundled tightly for cleaning up pots and pans. It was also termed "bottle rush" because the infertile needle-like leaves stick straight out from the stem, making it look and work like a bottle brush. Throughout the world, wherever horsetail was found, it has been a useful tool due to its abrasive nature.

Our Native American tribes also used horsetails as both a scrubbing tool and natural sandpaper. They used flattened reeds for a belt sander to smooth and polish the rounded surfaces of arrow shafts. The shaft would be held upright between the



Marshes and swamps are some of our most prolific and beautiful ecosystems. They provide ideal spawning environments and support a vast number of fish, insects, mammals, and invertebrates.



This sandy riverbank is prime habitat for horsetail. Here it is spreading out into a thicket and is one of the taller species. In the Devonian period, the ancestors of today's horsetail could reach 30 feet tall.

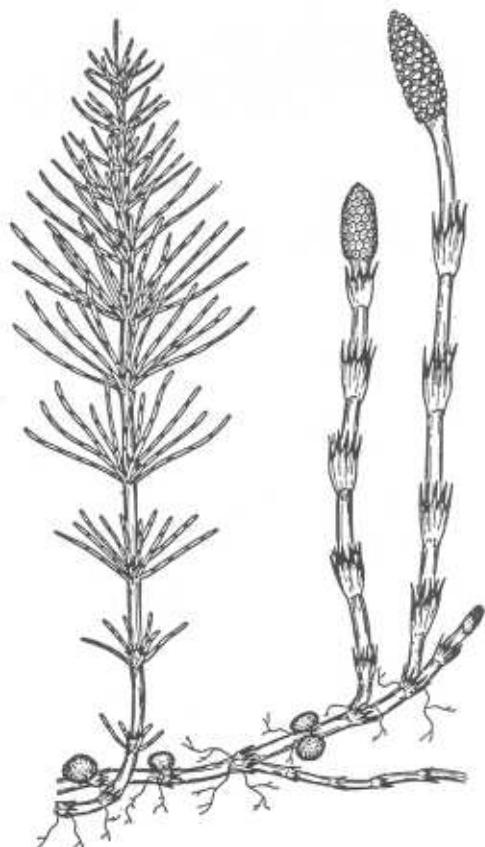
knees and the long strip pulled back and forth.

Horsetail has also been used as a survival food, but only under threat of starvation, because it contains some alkaloids that influence the digestive system. The outer tissue of young shoots is removed, the inner core eaten raw, and it's said to have a mildly sweet taste.

As a medicinal, horsetail has long been used in folk medicine, particu-

larly in healing wounds. It was applied as a poultice to stop bleeding, and a liquid extract will help oral infections. There is even some evidence to suggest that it has antibiotic properties.

Even if you don't have a practical use for horsetail, gather the mature fertile rods and allow them to dry flat or hang upside down where there is plenty of air circulation. They retain their bright green coloring indefinite-



This drawing allows us to see all parts of the horsetail plant at once, even though you rarely find both types of rods at the same time. On the left is the infertile rod with its whorls of needled leaves. On the right is the slip fertile rod topped with the cone-shaped sporangium. The roots show why horsetail is so invasive.

ly and can be enjoyed as dried bundles in the home or used in crafts.

Beware of planting horsetail in your garden, because it will become invasive if there is sufficient moisture. However, it thrives in containers and makes an exotic addition to Asian and water inspired landscapes. Δ

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The roots of cattails connect the individual plants with underground rhizomes, the fleshy roots which contain a starchy food. Where the rhizome meets the base of the plant is the root stalk, and it too contains edible core materials. The cigar-shaped seed head is shown, though the slender spike above held the pollen-bearing flowers earlier in the season.

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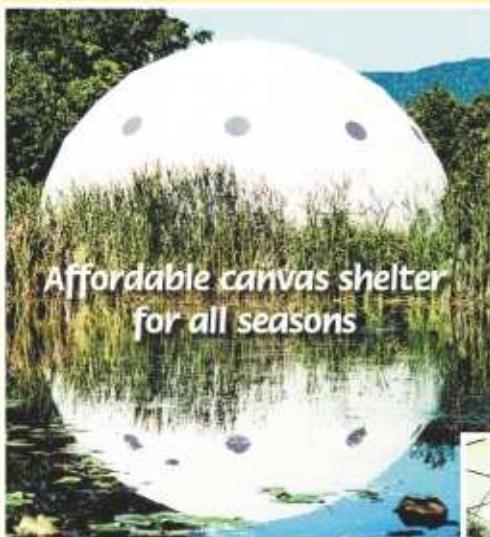
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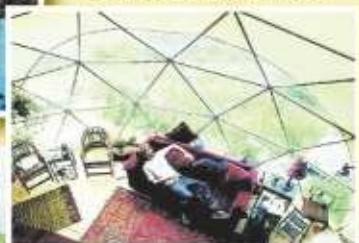


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It's all happening at the Fair

By Michael Hackleman

Looking for a place to learn about renewable energy (RE) and see and touch the hardware? Check out the *The Midwest Renewable Energy and Sustainable Living Fair*, June 22-24, 2001, in Amherst, Wisconsin, hosted by the Midwest Renewable Energy Association (MREA).

I've made the pilgrimage cross country to this event for the past nine years and I always look forward to it. The fact that MREA is celebrating its 12th annual Fair says a lot for its tenacity, popularity, and viability.

Amherst is a small town—within an hour's drive of two major airports—and the Fair has a friendly and a relaxed air to it, but everything else about this event is *big*. In 1999, the

Fair logged 15,500 attendees from 49 states and 40 countries.

What I like most about the Fair is the workshops. There are more than a hundred different ones to choose from during the 3-day event. Topics? Solar and wind electric systems, solar cooking, alternative housing, fuels and transportation, organic gardening, simple living, responsible investments, straw bale construction, masonry stoves, solar space heating, recycling, solar hot water, wind water pumping, garden seed saving, and others. There are 14 workshops running at the *same* time, 5 times a day (6 on Saturday), and 1½ hours each. Their program guide is a masterpiece of design to aid the attendee in choosing the workshops of choice.



The Fair is held at the Portage County Fairgrounds, just a brief walk from Amherst in the lush countryside so typical of Wisconsin. The MREA has a permanent building at the fairgrounds with a solar-heated radiant floor, wind and solar-generated electricity, and both strawbale and cordwood walls. There are ongoing demonstrations of these technologies all weekend, both at the fair and through bus tours of RE-powered homes in the vicinity.

I love to cruise through the long rows of vendors (there are more than 150 of them), asking questions, and checking for bargains.

Family-based workshops and entertainment abound at the Fair. Children will enjoy the LEGO Village, making recycled art, and learning about the earth—giving parents a chance to pursue their own interests. There's a

wide variety of good, wholesome food available onsite.

The keynote speaker this year is Julia (Butterfly) Hill and the opening address will be given by Paul Watson of Sea Shepard fame.

SolWest

A month after the midwest event, there's the 3rd annual SolWest fair, in John Day, Oregon. Jennifer Barker is the guiding light behind this event and she's done her homework. It is definitely out in the boonies, but it's a great gathering of novice and expert alike, with workshops, displays, demonstrations, tours of RE sites, vendors, dynamic countryside, lots of fresh air, good food, and your choice of camping or motels. The 2000 event even hosted an Electrathon race.

Treat yourself to either event (or both). Maybe I'll see you there. Δ



Energy Fairs

June 22-24: Midwest Renewable Energy Fair

Location: Amherst, Wisconsin

Address: MREA, 7558 Deer Rd., Custer, WI 54423

Contact: Katy Matthai

Phone: 715-592-6595

E-mail: mreainfo@wi-net.com

Website: <http://www.the-mrea.org>

July 28-29: SolWest

Address: EO Renew, P.O. Box 485, John Day, OR 97820

Contact: Jennifer Barker

Phone: 541-575-3633

E-mail: info@solwest.org

Website: <http://www.solwest.org>

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ENERGY WORKS



Installing a hydro system

A low-buck, low-tech approach to tapping a water source for power

[This is the third in a series of articles on hydropower which details the processes and hardware involved. In *Do-it-Yourself Hydro Survey* (BHM, Jan/Feb 2001), a site survey established the potential to generate power from the seasonal flow of water in two streams. In *Restoring A Hydro Unit* (BHM, Mar/Apr 2001), the alternator of a Burkhardt turbine was rebuilt and a simple, practical control circuit was fabricated for it. This article reflects the beginning of the actual installation of this hydroturbine (a high-head, low-flow, Pelton-type unit) at Motherland outside Willits, California.]

By Michael Hackleman

A site survey and the restoration of a used Burkhardt turbine brought Donna D'Terra closer to the installation of a hydro-electric system at MotherLand. Her home in the canyon receives little winter light for the solar panels mounted on its roof. Soon, the two seasonal streams that would power the system would be flowing.

The first job was to locate the intake. The intake of a hydro system is the point where the water diverted from a stream is channeled into a pipe to flow and build pressure so the hydro unit (located much lower) will work.

At Motherland, a road to the upper portion of the property cut across two seasonal streams above their point of convergence lower down. The outflow of the two culverts used to channel the water under the road seemed a natural point to divert water while avoiding some of the hazards and challenges of installing an in-stream intake.

Using the hose-and-gauge method, I found the 300+ foot distance between the intake and the site of the hydro

unit to have a head (vertical distance between these points) of approximately 100 feet. In the middle of the previous winter, I used the tube-and-bucket method of gauging the rate of flow in the stream at the base of the hill to be 24 gpm (gallons per minute). Observation suggested that one culvert had twice the outflow of the other, so I deduced a 16-gpm flow in the north fork and an 8 gpm in the south fork of these streams.

The scope of the installation was simple to state. Divert the water from two culverts into a sediment-catching barrel, filter it, and have it gravity flow to the hydro unit where it makes electricity that is routed to and interconnected with the existing solar array and battery pack.

For a number of reasons, I opted to do this installation as a learning experience. As such, I reached an agreement with Donna D'Terra on how this would work and the project began.

I had goals. Keep it simple. Obtain off-the-shelf parts from hardware stores or materials found around the shop or house. Use simple tools, hand or electric. Keep it low-tech and low-buck.

I will describe the installation as it actually unfolded. For example, while I had *ideas* on how to divert water from the culverts, I wanted to pare these down to one, fabricate the hardware, and install and test it *before* I wrote about it. Since I have limited experience with hydro-electric systems, I opted to start with stuff I knew I could do, giving ideas on how to do the more complex parts time to simmer and gel.

Accordingly, I fabricated and installed the sediment barrel, intake filter, and pipe track. I also attached

and wired the homemade control box to the hydroturbine, bore-sighted its nozzle/jet assembly, established where the hydro unit would be positioned, sized and installed the electrical wiring that would connect it with the existing solar-electric system, and assembled some of the system's plumbing—all of which is covered in this article. Subsequently, I will cover the installation of the hydro unit, monitoring system, and the water diversion assemblies at the culverts.

Sediment barrel

Early on, I decided to isolate the hydro system's intake (where the water enters the pipe to the hydro unit) from *direct* connection to the culverts (the source of the water) by using a sediment barrel. I chose a 55-gallon plastic barrel for this job. I needed to position it slightly downhill of the outlets of both culverts. I figured to divert water from the two culverts via 2-inch pipes. I wanted to direct the outflow of these pipes at a *shallow* angle onto a screen covering the barrel's top. This should ensure that leaves, rocks, and other material in this swift flow of water would fly across and off the barrel's screen while the water would fall through it and fill the barrel. In turn, this water would be sucked through the intake filter (positioned halfway up the barrel) and into the pipe track feeding the hydro unit in the valley below. The barrel would need both a clean-out plug and overflow port.

I positioned the barrel before I did any work on it. When the barrel was filled with water, it would weigh 400 pounds. So, I was looking for a site that was *solid* and slightly lower in elevation than both culverts. At this



1



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site, the best option appeared to be a large cluster of big rocks alongside one creek bed. A line of small trees led down to it, supplying handholds and giving good access to the barrel even in poor weather conditions. I took the barrel down there, propped it in place, and assured myself the site met the criteria *and* gave good access to the pipe track.

It took 1½ bags of concrete to make a secure foundation for the barrel. I had some help from Jem Klein, a young man who lives nearby and helps Donna with projects. We mixed the concrete up in a wheelbarrow on the road, Jem ferried it down in a bucket, and I set and shaped the foundation.

Concrete is the universal adapter, binder, and stabilizer. While the wet mixture shaped itself to the terrain underneath it, I set the barrel into the concrete mush, rotating it until its own mold line was aimed at the northern culvert up the hill. Then, I pressed down hard on the barrel, impressing its unique shape (of bottom) into the concrete. I also sculpted the mix surrounding the barrel to shed water and stabilize the overall structure.

I left the barrel in place while the concrete set and hardened over the

1. The sediment barrel is just visible downhill of the north culvert and roadway.

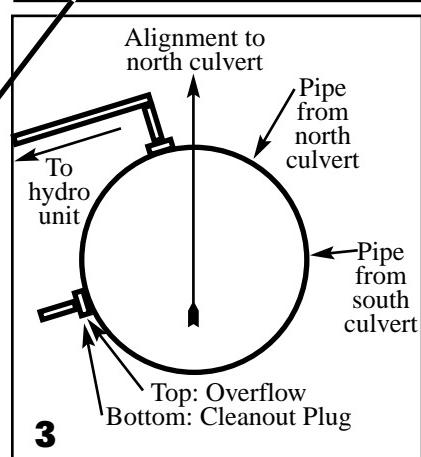
2. The contour of the barrel is impressed in the concrete base to level and help retain it.

3. An onsite drawing of the relative angles of pipes and fittings prevents mistakes back in the shop.

next week. Since the barrel's position was literally set in concrete, Jem and I next installed the pipe track.

A week later, I drew a large circle on a piece of paper, climbed down to the barrel, and set it on top. Since I intended to modify the barrel in the warmth of my shop, I needed to know *exactly* where everything would go (Fig. 4). I drew a reference line on the paper to the mold line on the barrel which had been aligned with the culvert when set in the concrete.

I first noted the best place to locate the drain plug. Fine sediment that makes it through the screen settles to the bottom of the barrel. To clean the accumulated matter out periodically *without* upending the barrel, I wanted a 2-inch plug on the side, near the bottom, and facing the creek. When this plug was unscrewed, the 25-50 gallons of water released from the



3

barrel should splash away harmlessly and not erode soil or foundation. I noted, on both the paper circle *and* the barrel, the relative angle to this cleanout plug.

Next, I positioned the overflow port. Since I wanted any water directed out the overflow (with pipe and fittings) to land on the same rocky streambed, I aligned it with the cleanout plug below.

The hole for the intake of the hydro system was tricky. I knew I wanted it about midway up the barrel's side. Somehow, though, I wanted to be able to remove the intake pipe (stiff) from the barrel (heavy) *without* having to drain the barrel. This led me to position the intake's hole a quarter of the

way around the barrel and at a 90° to the pipe track. I noted the relative position of the intake on the drawing and barrel.

Finally, I noted the approximate points where the two feed pipes from the culverts would intersect the barrel. While they didn't require holes, I would need to figure out some way to secure these pipe ends to the barrel's top. Drawing and notes complete, I hauled the barrel up to the roadside and brought it home.

I used a saber saw to cut out the 2-inch holes for the cleanout plug, intake, and overflow fittings. It was a challenge to make watertight fittings. Threaded PVC couplers and fittings exist but the inside and outside pieces wouldn't pull together snugly against the barrel wall. Alas, their threads are tapered. As well, the cleanout plug and overflow port were located in areas where the barrel had a compound curve.

Steve Henderson at nearby Ukiah Valley Lumber clued me into the 2-inch nuts for EMT (electrical metallic tubing). They are *not* tapered and, thus, will spin all the way onto the threads of the PVC adapters (or any threaded pipe). Combined with a generous coating of silicone sealant, all three fittings (cleanout, intake, and

overflow) were secured tightly through the barrel walls.

Actually, I wasn't worried if the fittings leaked somewhat. The barrel is *not* a storage tank. In operation, the hydro unit will want 22-24 gallons of water per minute. So, even a leak of one gallon each minute from the barrel would impact this flow rate by a scant 5%.

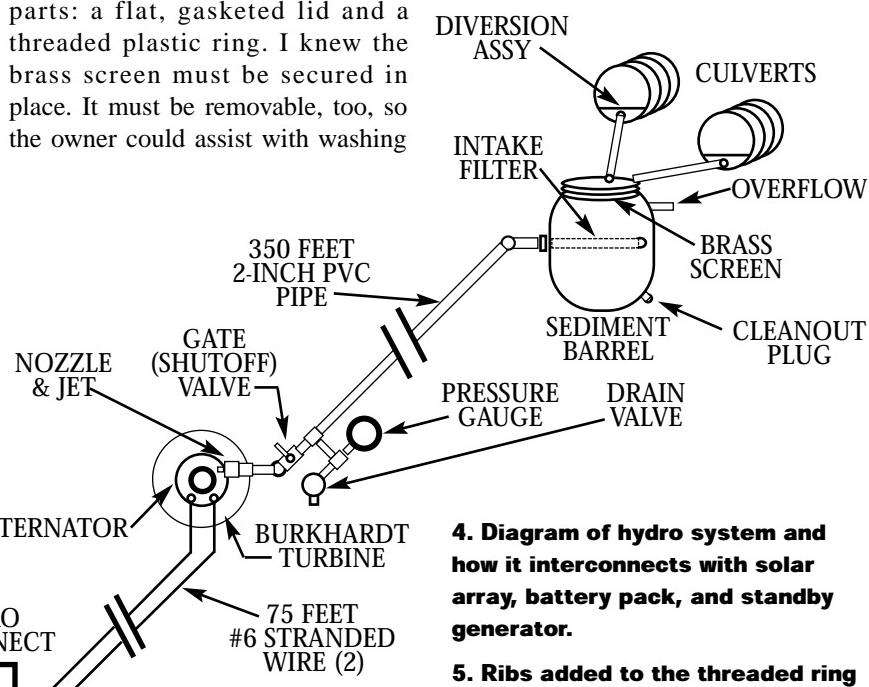
I needed a screen at the top of the barrel. Plastic screen is weak and vulnerable to sunlight. Aluminum and metal screen are subject to corrosion. Local hydro expert, John Takes, recommended brass. I finally found 1/16-inch brass screen on a 24-inch wide roll and purchased 3 linear feet of it.

I examined the top of the barrel and the lid. The lid consisted of two parts: a flat, gasketed lid and a threaded plastic ring. I knew the brass screen must be secured in place. It must be removable, too, so the owner could assist with washing

all the sediment out whenever the cleanout plug was pulled. I could see no future for the lid and discarded it.

I retained the 14-inch diameter ring and laid it over the brass screen on my workbench to figure out how to secure the two together. The ring was a bit more than 2 inches deep. I figured to fold the screen over the outside of the ring and clamp it. That added 1½ inches on each side of the ring for a screen diameter of roughly 17 inches.

I found a round laundry basket in the house with this same diameter, placed it over the screen, and used a marker pen to draw out the circle's cut line. I tried to cut the brass screen



4. Diagram of hydro system and how it interconnects with solar array, battery pack, and standby generator.

5. Ribs added to the threaded ring help support the brass screen.





6

6. Plastic ties hold the brass screen to the lid.

7. A bicycle inner tube covers the sharp edges of the brass screen.



7

Positioned just so that it held the tips of the brass tabs with the screen in place, the rubber band is easy to progressively lift over each tab of screen that is brought under it.

I threaded some 12-inch plastic ties together to make a larger thin band to affix the screen to the ring. I tensioned it by degrees, pausing to maintain tension in the brass screen across the face by pulling on different tabs.

I punctured and sliced my fingers on the exposed edges of brass screen several times as I was fitting the band. As the screened ring would need to be removed (and replaced) several times a season, I had to fix this. I wished for a big, wide, thick rubber band. That led me to think of a used bicycle inner tube. The owner of Dave's Bicycle Shop in Ukiah gave me a spent 26-inch tube and I tried several ways to attach it to the screened lid. Since the tube was nearly twice the diameter of the barrel's lid, I knew I would have to wrap it around twice to fit. I was worried that, if the band slipped, it would crumple the screen as it came off.

After a few tries, the process that worked to affix this tube was to orient the tube with the air valve (its innards unscrewed to expel all air) close to me, position the opposite side of the band on the far side of the lid (while it was attached to the barrel), and stretch and slip the band around the circumference in both directions until they met on the side near me. While I used one hand to clamp this junction, I placed all the slack tube up on the screen and rotated the barrel 180°. With my belt buckle now holding the junction, I used the other hand to stretch the tube (and the air valve)

with tin snips but they gagged on the soft material. A utility knife didn't help much either. I had wanted to avoid ruining any scissors but tried the worst pair I owned. Darn it, the brass screen cut easily.

Next, I snipped 2-inch long cuts in the brass screen (toward the circle's center) every few 2-3 inches around the circumference. This produced tabs which, when bent, would overlap one another when forced through a 90 angle. I bent each one of the resultant tabs along the circle marked on the screen. Now the screen curved beautifully around the corners.

Next, I considered how to compress a wire or band around the ring and over the brass tabs that would also prevent the screen from slipping off. The plastic ring had an intricate pattern of outside ribs on it, with six of them a little larger than the others. Instead of reaching for a file to cut a $\frac{1}{4}$ -inch slot through each one of the plastic ridges (so the band would find a grip), I reached for my soldering gun.

Soldering guns have replaceable tips. I positioned a spare tip on the anvil of my vise, hammered the tip flat, and used a file to make a fine edge on each side. I inserted this knife-edged piece into my soldering gun, pulled the trigger, and applied the heated tip to a portion of the plastic ring. The hot tip flattened the slot in the ridge like a warm knife through cold butter. The smell generated from this test reminded me to take this job

outside my shop where I

notched all six ridges in a few minutes.

I didn't like the way the brass screen sagged down in the center of the ring. Leaves and other debris could get trapped in this slight hollow, diverting the flow or eventually tearing the screen. Again, I used the heated tip of the soldering gun to fashion four, thin ribs out of a piece of scrap plastic sheet. I joined the ribs together with silicon sealant to span the center of the ring and converge at a point higher than the edges, giving a slight convex (rather than concave) shape to the screen.

[Note: When it comes to working plastic, I prefer a soldering gun over a saber (jig) saw. They are less expensive than a saw, use less electricity, are silent, are easier to use, and won't chip or shatter plastic. They will produce vapors you don't want to breathe, so do this work outside and stay upwind of the work. A 50-watt soldering iron is cheaper than a gun and will work, too, although more slowly. Both are available from electronic supply houses or places like Radio Shack.]

How would I hold the brass screen in place while I positioned and tensioned the band that would secure it? Rubber bands popped into my head, won out, and proved perfect. I made a long rubber band by joining individual bands together. (If you don't know how to do this, ask a kid.) It took me four #64 bands to span the circumference of the barrel ring and I joined its ends together with a paperclip.

across the barrel, pulling the tube around the lid on each side. I nudged the rubber tube over any exposed edges of screen until everything was smooth.

Intake filter

While the concrete pad for the barrel was still hardening, I fabricated the intake filter.

Pelton type hydro units are susceptible to pitting of the plastic or brass buckets by very fine sediment in the water. A jet of water and sediment at 50 psi (or greater) has a sandblasting effect on the Pelton wheel, spoiling its efficiency and, eventually, destroying it. A filter at the intake (located inside the sediment barrel) afford the last opportunity to reduce the size and amount of sediment that reached the hydro unit. [Never plumb a filter or any other flow-restrictive device near the lower end of the pipe track where it attaches to the hydro unit itself.] I'm certain off-the-shelf filters exist that will work in this application but I decided to make one from scratch.

A popular filter for the intake of hydro units is a larger pipe drilled with many tiny holes and set into a stream. This works for high-flow systems where volume rather than pressure drives the hydro unit. In Motherland's system, the brass screen on the sediment barrel reduced the foreign matter to $1/16^{\text{th}}$ of inch in size. I wanted the intake filter, then, to strip away the really small stuff in the water that made it through the brass screen.

The first job was to figure out where the filter would go. Since I wanted it to be easy to remove, inspect, and replace, I looked to put it inside the barrel. I selected a PVC adapter in the sediment barrel at the hydro's intake which had threads on the outside—to secure the fitting to the barrel *and* make the connection to the pipe track—and a coupler for a 2-inch pipe on the inside. The inside of the barrel was 22 inches in diameter. I cut a 19-

Sidebar A: Math of filter-to-intake ratio and size and number of holes.

1. Intake (cross-sectional) area.
Pipe I.D. (inside diameter) = 2 inches, radius = 1 inch
 $\text{Area} = \pi \times r^2 = 3.1428 \times (2.375/2)^2 = 3.73 \text{ in}^2$
2. Drill size = $\frac{3}{4}$ -inch = 0.75 inches, radius = 0.375 inches
 $\text{Area} = \pi \times r^2 = 3.1428 \times (0.375)^2 = 3.1428 \times 0.141 = 0.44 \text{ in}^2$
3. Filter-to-Intake ratio = 2.5 to 1 (arbitrarily selected)
4. Total filter area = filter-to-intake ratio x intake area
 $= 2.5 \times 3.73 \text{ in}^2 = 9.325 \text{ in}^2$
5. Number of $\frac{3}{4}$ -inch holes = filter area divided by hole area
Holes = $9.325 \text{ in}^2 \div 0.44 \text{ in}^2 = 21$
Number of $\frac{3}{4}$ -inch holes actually drilled = 24
6. Additional $\frac{1}{2}$ -inch holes drilled = 20
7. Drill size = $\frac{1}{2}$ -inch, radius = 0.25
 $\text{Area} = \pi \times r^2 = 3.1428 \times (0.25)^2 = 3.1428 \times 0.0625 = 0.20 \text{ in}^2$
8. Total area of $\frac{1}{2}$ -inch holes drilled = $20 \times 0.20 \text{ in}^2 = 4 \text{ in}^2$
9. New filter area = $9.325 \text{ in}^2 + 4 \text{ in}^2 = 13.325 \text{ in}^2$
10. New filter-to-intake ratio = $13.325 \text{ in}^2 \div 3.73 \text{ in}^2 = 3.5$ to 1

inch long piece of 2" PVC tubing (the same used in the pipe track) to serve as the *core* of the filter and fitted a cap at one end. The other end would SLIP into the coupler fitting for the intake (without glue), positioning the filter halfway up from the bottom and suspending (and supporting) it horizontally in the water across the width of the barrel. To remove, it need only be twisted and pulled away from the coupler and lifted out of the barrel.

With a filter, the finer the mesh, the harder it is for the water to pass through it. A way around this resistance in any filter is to increase the *ratio* of the *filter area* (combined area of drilled holes) to the *intake area* (2-inch diameter pipe) by a factor of two, three, or more.

My plan was to drill many holes into the filter's PVC core and cover it with a fine cloth or fabric. But—what *size* of hole and how *many*? First, I had to find the cross-sectional area of the 2-inch intake. Second, I had to establish a reasonable filter-to-intake ratio. Finally, I needed to establish the size and total area of the holes I drilled. I had a shiny new $\frac{3}{4}$ -inch wood bit I wanted to use, so I did my first calculations for this size of hole



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8. Inside view of the 2-inch filter core after drilling.

in the filter core (Sidebar A). The math said I needed to drill 24 holes.

I reserved 2 inches at each end of the 19-inch filter core for fittings and ties to hold the screen and fabric, leaving roughly 15 inches of the pipe in which to drill holes. If I spaced 4 lines of holes equally about the pipe's circumference, I could easily get 6 holes in each line spaced 2 inches apart.

I was ready to draw a hole-drilling template for the pipe. This is a neat little trick to position holes accurately around the perimeter of a pipe for drilling. Generally, the template is used as a guide for drilling pilot holes (a small size of hole to keep a larger drill bit from wandering) which

Sidebar B: Making a hole-drilling template for 2-inch PVC pipe

1. Find the outside diameter (O.D.) of the 2-inch pipe. Using a ruler, I measured the O.D. at 2.375 inches.
2. Find the circumference (C) of the pipe.
$$C \text{ pipe} = \pi \times \text{O.D.} = 3.1428 \times 2.375 \text{ inches} = 7.5 \text{ inches}$$
3. On the grid paper, near the top, mark two points 7.5 inches apart horizontally.
4. Wrap the paper tightly around the pipe. Note that the overlapped paper aligns one of the marked points directly over the other.
5. Select points equidistantly ($\frac{1}{2}$, $\frac{1}{3}$, or $\frac{1}{4}$ of the way) *between* the two initial points to space, respectively, two, three, or four (or more) lines of holes around the pipe's circumference throughout its length. Remember: one line of holes is for reference only. When the paper is wrapped around the pipe, this reference line sits atop another line of holes.
6. Establish the spacing between the holes. Even with 2 inches between the holes in a line, I didn't use all of the 15 inches of pipe length available to me. As well, to maintain structural integrity of the plastic pipe, I opted to offset the holes in adjacent columns.
7. Make additional copies of the template and overlap them for any length of pipe.



9



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would then be enlarged with the $\frac{3}{4}$ -inch bit.

I made my template on the computer and printed it out. However, the template is easily drawn with pencil and paper (Sidebar B). I recommend using blue-lined grid (graph) paper, 4 or 8 squares per inch, for the template.

I taped the template to the filter core, overlapping extra copies of it to handle its length. I drilled the pilot holes, removed the paper template, and chucked the $\frac{3}{4}$ -inch bit into the drill. Incidentally, I don't recommend using standard (metal) drill bits of $\frac{1}{2}$ -inch or larger for PVC pipe. The plastic material is soft enough to grab the bit but brittle enough to chip and crack if you resist its tendency to pull the bit rapidly through the pipe wall. Using wood bits proved less stressful. After drilling all the holes, I used a long, large, quarter-round file to smooth the rough edges of the holes, inside and out.

As I looked over the hole-studded core, I felt apprehensive. Had I drilled too *few* holes? I opted to add four *more* lines of holes between the existing ones (Sidebar A). I selected a smaller, $\frac{1}{2}$ -inch bit for this job as I was afraid extra use of the $\frac{3}{4}$ -inch bit might shatter the PVC pipe. The extra

9. A hole-drilling template is wrapped around the 2-inch filter core.

10. The template is removed after the pilot holes have been drilled.

11. Plastic ties secure brass screen around the core before the fabric is attached.

12. A fine mesh of nylon fabric is wrapped around the screen on the filter core.

13. The filter is inserted into the intake fittings in the sediment barrel. Note the overflow and cleanout fittings.

holes boosted the filter-to-intake ratio to 4:1 and I felt better.

I visited a local fabric shop to search for a suitable material to use as a filter cloth. I wanted something that wouldn't rot, clog, or swell when submerged in water. I got half a yard (\$6) of a thin nylon fabric with a weave finer than that of the brass screen. [Later, it occurred to me that used nylon stockings would probably work if one avoided the sections with runs.]

I elected to *first* wrap leftover brass screen around the holes in the filter core and *then* apply the fabric. Why? A Pelton-type hydro system, once set in motion, creates strong suction on the intake filter. I didn't want the fabric to dimple into the holes in the PVC core as a result and be cut by their rough edges. The brass screen prevented this, supporting the filter's nylon fabric across these openings.

I wrapped brass screen around the filter core (with a slight overlap) and used plastic ties to secure the ends and middle. I cut the nylon fabric a little wider than the screen, wrapped it twice around the filter core, and also secured it with three ties. These may be cut away if the fabric becomes clogged and needs replacement.

Pipe track

After the sedimentation barrel was positioned and secured, it was time to lay the pipe. Whether one lays the pipe track working up from the bottom or down from the top depends largely on access to these points. Walking uphill with pipe is lots of work, while walking downhill with pipe is only sometimes challenging. Either way, slippery pipe on steep slopes is a rollercoaster waiting to launch the moment we were careless about handling or securing it.

Donna purchased 300 feet of 2-inch Schedule 40 PVC pipe, which is designed for higher pressure (280 psi) than the more standard (*and* less expensive) Schedule 80 pipe. This



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14. The pipe track stretches uphill and across a streambed.

15. Jem Klein adds PVC glue before joining pipe sections.



15

system would only experience 50-60 psi but it was the thicker wall I wanted to handle the hardship of rough terrain and above-ground use. A truck containing 15 lengths of 20-foot pipe was driven to the upper end and unloaded.

The initial 120 feet of pipe exiting the sediment barrel would traverse a steep, nearly impassable slope before it crossed the stream onto more solid ground. Jem and I schemed on the best way to get the pipe started. Since 20-foot sections of this 2-inch pipe are fairly light (13 lbs), we elected to join three 20-foot sections together on the roadbed. After the glue was set, we "noodled" the 60-foot segment down into position, which worked because the pipe is so flexible. We repeated this process again initially and it helped us bridge the most inhospitable portions of the track with only a few joints to glue and tie off. Since the pipe track paralleled the upper road for awhile, we temporarily joined 20-ft segments together and lowered them to the pipe track at a convenient point, stockpiling them until we needed them.

If you haven't joined plastic pipe before, you'll be happy to know it's pretty straightforward to do. If possi-

ble, purchase pipe that has a bell at one end, which means the pipe flares out to become the coupler for the next section. This is less expensive than buying uniform pipe that can only be joined by a separate (expensive) coupler.

PVC plastic pipe is joined with a glue that actually softens the plastic at the joint so that the sections weld together. To help this bond, the end of each section to be joined is first cleaned with a damp cloth, dried with a second one, and coated with a purple PVC primer. This reduces the emissions (vapor) from the glue when it is added. (Read and heed the instructions on the can. This is nasty stuff.) The cap of the primer and glue cans has a built-in applicator that is ball-shaped. By gripping the cap tightly with the fingers, each can be evenly applied in a rotary motion to both sections at the joint. The protocol is to swab each on the *inside* of the bell coupler first. This way, it won't be contaminated if the pipe touches the ground while you're swabbing the *outside* of the other section before joining the two ends.

While the glue is still wet, the pipe end is inserted into the bell (until it bottoms out) *and* twisted as much as

$\frac{1}{4}$ turn. Hold the two ends together for 10-15 seconds (double this for a steep slope) for the join to set or it may pull apart. Thereafter, the pipe should not be moved, bent, or otherwise disturbed for at least five minutes or the join may leak. During this time, Jem and I would bring up the next pipe section, position it, clean the ends, and prepare the next join.

Soil, small stones, and organic debris will find its way into the pipe during this process. It is unavoidable. Of course, this debris must be flushed out of the pipe track *before* the pipe is connected to the hydro unit. Once the streams start to flow, I figure to run through a few fill-and-flush cycles.

The pipe track should be *loosely* tied off periodically (every 10-20 feet of its length). The trunk or large branches of trees will work as anchors. If none are available, use stakes. The pipe track *must* be secured. A 20-foot section of 2-inch pipe will weigh 46 pounds when filled with water (Sidebar C). This 300-foot long track of pipe, then, will weigh 690 pounds in service, so I did a good job.

[I'll pass on a story I've heard from several sources. The proud owner of a newly-installed hydro system discovered that, after a rainy night, it had stopped generating power. When he went to investigate, he found all 1,200 feet of track pipe at the base of the hill in one big, very twisted and broken pile. *It had not been secured.*]

I used 3/16-inch nylon line to secure the pipe. It won't degrade with exposure to weather as ropes will. I used a pocket lighter to heat and fuse the two ends produced when the nylon line was cut to prevent unraveling. In the steeper sections, I wound duct tape over the rope wrapped around the pipe to ensure it will not slip.

At one point, the track pipe crossed a streambed. I selected a crossing where there were mature trees on each side that already spanned this gap. Again, I used nylon rope to help suspend the pipe above the highest possible flow of water and from branches or trunks that would move very little in the wind. Since trees grow, sway, and even fall down, the pipe track

should be walked after each season to loosen or tighten the nylon line at anchor points and detect any leaks.

Where possible, the pipe should lay flat on the ground where it will be sheltered from low ambient (air) temperatures. As others have done, Donna plans to lightly cover the pipe along many sections of the track with soil and leaves to further increase this protection. Water flowing in a pipe is less likely to freeze than water which is stationary. Still, the hydro unit can be shut down and the pipe track emptied of water for brief periods of sub-freezing temperatures. Folks in colder climes may need to bury the track pipe and add insulation to the pipe where the terrain prevents burial.

It is important to ensure a slight downward angle *throughout* the length of the pipe track. Any high spots in the pipe track can and will trap air, adversely affecting system performance. If this is unavoidable, add a water valve at each high point to bleed off accumulated air, as needed.

Sidebar C: Weight of water in a 2-inch PVC pipe

1. Area of 2-inch pipe per foot = 3.73 in^2 (from Sidebar A)
2. Convert square inches to square feet

$$1 \text{ ft}^2 = 144 \text{ in}^2 \text{ (conversion factor)}$$

$$= 3.73 \div 144 \text{ in}^2 \text{ per square foot}$$

$$\text{Area of 2-inch pipe} = 0.026 \text{ ft}^2.$$

$$\text{Volume of 1 foot (length) of 2-inch pipe} = 0.026 \text{ ft}^2 \times 1 \text{ foot}$$

$$= 0.26 \text{ ft}^3$$
4. Weight of water in 1 foot of pipe = volume x weight of water per pound
Water is 64 lb per ft^3 (conversion factor)
Weight = $0.026 \text{ ft}^3 \times 64 \text{ lb} = 1.664 \text{ lbs}$
5. Total weight per foot of pipe = weight of pipe + weight of water
Weight of 1 foot of pipe (empty) = 0.65 lbs (measured)
Weight = $1.664 \text{ lbs (water)} + 0.65 \text{ lbs (pipe)} = 2.314 \text{ lbs per foot}$
6. Weight of 20-foot section of 2-inch pipe (filled) = weight per foot x 20 feet
Weight = 46.3 lbs
7. Gallons of water in 20-foot section
Weight of water in 20-foot section = 33.28 lbs
1 gallon of water = 8 lbs (conversion factor)
Gallons = $33.28 \text{ lbs} \div 8 \text{ lbs/gal} = 4.16 \text{ gallons}$
8. Therefore, a 20-foot section of 2-inch pipe filled with water weighs 46.3 pounds and contains 3.5 gallons of water.



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16. The pipe track is secured every 10-15 feet with nylon rope. Don't bind it tight to the anchor point.

The hydro unit

The hydro system takes water from two stream beds which normally converge, run *west* to the base of the hill, and join a larger streambed at a point more than 400 feet *north* of the house. Fortunately, the terrain was such that I could avoid an extra length of pipe by planning a more direct routing of the pipe track to a point close to the house for easy monitoring, inspection, and adjustment of the hydro unit.

It is prohibitively costly to buy and install electrical wire to carry 12V power between a hydro unit and a house over any large distance. Generally, it is 2-4 times more expensive to run wire than pipe, where there's a choice.

There were two additional benefits to the hydro site I chose in this installation: erosion control and access. The *original* streambed was suffering erosion at the point where it originally entered the large stream. At the chosen site for the hydroturbine, the discharged water entered an existing (different) streambed which ensured that it had a good path back to natural drainage. The culvert for this streambed was in direct line with the more direct routing of the pipe track. By routing the pipe *through* the culvert next to the house, I avoided having to bury the pipe or substitute hanging or buried wires across a courtyard. While these factors are site-specific, they illustrate that a good cost-benefit ratio results from such consideration of the range of factors that do apply at any site.

I advised Donna that the hydro unit would produce *some* noise. After some discussion, we agreed to install the hydro unit in a temporary way so she could experience a season with it in such close proximity.

I wanted to take the hydro unit home to finish up some work on it. Nevertheless, I took the time to position it precisely, enabling me to make critical decisions about related topics such as electrical wiring, plumbing,

foundation, controls, and weather-proofing.

To this end, I positioned two redwood beams over the dry streambed about 10 feet away from the culvert through which I had routed the last of the pipe track. Set astride these beams, the hydroturbine can safely discharge water without eroding the banks. I used a claw hammer to dig, shape, and level the soil where the beams intersected the bank so they wouldn't slip or roll sideways. If this site proves acceptable, these will be replaced with concrete blocks. I temporarily added shims to the cross-pieces to level the hydro unit and aim its intake pipe at the point where the pipe emerged from the culvert.

Once the hydro unit was set in place, I could see how I might bend a thin sheet of clear acrylic plastic over the hydro unit and its control panel and screw its ends into the beams. I figured this would give the alternator the weather protection it needed, provide some noise abatement, and spiff up the look of the installed unit, too.

At the point where the pipe track exited the culvert, I installed a 2-inch tee. The tee would accommodate plumbing to mount both a drain valve and a pressure gauge (Fig. 17)



17. A pressure gauge and 3/4-inch drain valve are assembled, ready to be added to the pipe track.



18. The homebuilt control box is bolted and wired to the hydro unit.

Next to the tee, I added a 2-inch, in-line ball valve. The 2-inch ball valve was there to turn on (or shut off) water to the hydro unit. Normally, mounting *any* valve low in a hydroelectric system is *not* recommended as it resists the flow of water even when fully open, reducing pressure and power output. Some valve types (alas, the inexpensive ones) are horribly resistive. A gate valve has the least resistance but suffers when sediment fills the bottom inside of the gate's guide. Mounting it vertically would offset this limitation but that wasn't going to work in this layout. I opted for a brass ball valve that rotated through 90° with the lever aligned (parallel) with the pipe when it was open.

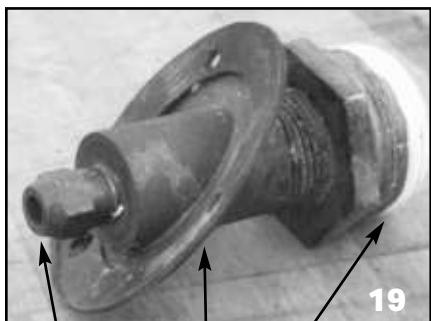
I wanted to plumb the ball valve, a drain valve, and the pressure gauge at the culvert's end (instead of the hydro unit) for a good reason. Even in bad weather, Donna would be able to walk up to these controls from the roadbed, read the pressure gauge, shut the water on or off, and even drain the pipe track. I planned to orient the pressure gauge so that its reading would be visible from either the roadside or the hydro unit itself.

I took home the hydro unit. Now that I had decided how to weather-proof the hydro unit, I knew where to mount the homebuilt control box for its alternator. I drilled a 1/4-inch hole in the side of the control box, bolted a 2-inch angle bracket to its wall, and sandwiched the other end into the

support structure for the hydro unit (Fig. 18).

Next, I crimped spade connectors on the wires from the control box and secured them to the alternator's field (F), rotor (R), and B+ terminals. Plastic ties secured these wires together and to the hydro unit's support structure.

My next focus was the nozzle-jet assembly. The hydro unit had been hacksawed out of its previous application and I needed to remove the old



19. The nozzle-jet assembly is designed to bolt to one of the two aluminum bowls.

20. The beam of a flashlight helped to align the nozzle with the Pelton wheel.

21. New fittings were added to mate the hydro unit to the pipe track.

fittings and install new ones. Because this unit was mounted to one of the thin aluminum bowls, I unbolted it to avoid warping the thin material while I wrench off the old couplers. Once it was off, I exchanged old with new couplers. When I began to replace it, I discovered that the holes in the bowl were much larger than the plate which held the nozzle assembly. How would I correctly align the jet to the Pelton wheel? I roughly bore-sighted it (looked through the jet) from the nozzle end as I loosely bolted it up. Then, in a flash of inspiration, I pressed the lens of a flashlight against the new coupler, switched it on, and turned off the shop lights. Sure enough, I was able to keep the jet aligned with the buckets on the Pelton runner while I bolted it tight.

I purchased and installed the fittings that would plumb the hydro unit to the pipe track. Now, I need only install the hydro unit and cut the last segment of pipe track to the correct length to terminate in these fittings.

Electrical wires

There was a measured distance of 75 feet between the hydro unit and the existing system—service panels, controllers, and battery pack. First, I needed to size the wires between the hydro unit and battery pack.

Using a table in one of my books (*Better Use Of*), I noted that a 15A current (i.e., 180W output) transferring 12V electricity a distance of 75 feet would require two #4 wires (5% loss) or two #6

wires (10% loss). I finally opted for #6 wire. My justification? A hydro system is a 24-hour power source, so the 5% of difference in efficiency didn't amount to much power while the #4 wire was more than *twice* the cost of #6 wires.

I purchased 75 feet each of black and white stranded #6 wire. Leaving enough wire at the service entrance, I routed the wire under a large deck, nailing it along a beam with the U-shaped brads used for securing cables.

A narrow, deep trench was dug to extend the wire from the end of the deck to the hydro unit's position. I cut, inserted, and buried a 10-foot section of 1-inch PVC pipe in this trench to route and protect the wires. I then taped the ends of the #6 wires together, along with two strands of smaller wire (for the shunt) of the kind used for doorbells. I pushed these bundled wires through the pipe from the deck end until they emerged at the hydro unit.

Next issue

A week before I was ready to bus up to Gold Beach, Oregon, to lay out this issue, Motherland was blanketed with a few feet of snow and the access road became impassable. So ... this is a good place to stop.

It's just as well. I've designed and constructed the culvert diversion assemblies (which will feed water to the sediment barrel), but they have not been installed. Since these units are highly experimental, I don't want to spend *any* time discussing their construction until I *know* they will work. As well, the seasonal streams are just now beginning to flow somewhat but are not at full strength.

It will be two months before the next issue goes to press. In the interim, I will complete the installation and, nature willing, the water will be of sufficient flow soon to bring the system online.

(Michael Hackleman, P.O. Box 327, Willits, CA 95490. E-mail:mhackleman@saber.net)



Letters

(Dear Readers - Thank you for writing to Backwoods Home Magazine. The opinions and suggestions we receive from our readers are very important to us. We regret that we are no longer able to print or individually respond to every letter received due to the volume. We do read every letter received, and pass them along to the editor or writer concerned. We print a selection from our mail that best represents the views and concerns of our readers.

— The Editors

Masonry stoves

I'm writing about the article on masonry stoves in issue #66 Nov/Dec 2000.

Been reading about them off and on over the last twenty years.

Where can I get plans or a drawing as I will be building in spring of '01 and would like to incorporate one in our planned home.

I had lived in the mountains of southwestern PA, then Oct '99 came to FL and will be going to the mountains of west VA and back to homesteading.

John Ruth, Palm Coast, FL

We've added a book on masonry stoves in this issue called *The Book of Masonry Stoves*. See page 93. We also did an internet search and came up with 9,330 sites. — Dave

Tanning hides

I have nearly all issues of your magazine since July/August 1999 but do not recall if you ever printed a recipe to tan leather without Quick Lime.

Quick Lime is next to impossible to obtain these days—why? I have several leathers I wish to tan and more to do in the future. If someone has a recipe without Quick Lime, would you be so kind as to print it in one of your forthcoming issues?

Wilma L. Fields, Lancaster, CA

We have such an article in this issue. — Dave

it really says, in depth, the kind of things I've believed for years. You may be familiar with the kind of looks I get when I call today's United States a fascist country.

Even better are the looks when I explain what I mean, and the listener realizes what I've known for some time.

Are reprints of the series available? I'd like to get a few to post on bulletin boards at work and school. There are all sorts of people out there who would never think that BHM would be their kind of magazine, but need this sort of information in an easily understandable format. Your eminently likeable character of O.E. MacDougal makes the story at once more accessible and more chilling. Actually, he's been the thing that makes me buy BHM more often than any other single reason. I should have supported your highly enjoyable magazine with a subscription far earlier, but I haven't felt so strongly about it until now, with wanting to finish out the series as quickly as you can publish it.

My apologies for rambling on so long—I know you have another issue to get together. Please keep up the good work. It may not be the most lucrative career you could have embarked upon, but it is so necessary.

Craig Greenlaw, Hillsborough, NC

We'll put the whole series in a book when it's finished. — Dave

I have been reading your magazine for several years now, but I am really happy to be reading (getting an education) through the "The Coming American Dictatorship" article. Mac seems to have investigated the facts to back him. I have felt that I was the only one with these opinions. While trying to convey my thoughts about "WE THE PEOPLE" to "US THE PEOPLE" (friends, relatives, co-workers, clients, etc...), I often was dismissed for lack of facts and/or

Need pen pals

I homeschool my three children, ages eleven, nine, and nine. I am looking for pen pals for my children. We live way out in the woods and I would like to find some other "country" kids for them to write to.

Christine Muller
30530 Smith Logging Rd.
Oak Run, CA 96069

"Life at sea" article

I had the same dream...fishing for the biguns, sailing the Atlantic to Ireland or at least, to Bermuda. Then I saw that movie "Perfect Storm" and read the book. It scared the bejesus out of me. Ain't nothing wrong with staying alive.

Bought my first copy of your mag at Barnes and Noble in Memphis. Best magazine I've ever read.

Doyle Allen

Dictatorship article

Love your mag but I am hoping to see a little more emphasis on alternative construction (translated—cheap housing). I enjoy John's articles on *The Coming American Dictatorship*. If you want an example of what an elected DICTATORSHIP looks like, just look at your neighbor to the north. We live with almost complete government intrusion in just about every aspect of life, be it business, recreation, religion, etc...Don't even think about applying for a carry permit here. It has never been, nor will it ever be allowed, I fear. I don't think a lot of Americans truly appreciate what they have. Thanks for all that you do and the message you are promoting.

A. Sawatzky, Canada

I have been enjoying the series on *The Coming American Dictatorship*—

examples. Many who listen, whether they agree or disagree, vote or not, feel powerless to make change.

Anyhow, the reason for the letter, is to inform you that "Family Law" just aired an episode reflecting the following statement (from your article):

"What about judges?" I asked.
"Why don't they step in?"

"The judge can be your worst enemy in the courtroom."

A woman (one of the lawyers) had her breast uncovered and shown on Evening News while covering a riot. She sued the TV station. While fighting an uphill battle, she did obtain evidence to prove her point. The jury sided with her and awarded her \$5 million. The camera flashes back to the judge, who barks to the jury about trying to rewrite the first amendment, telling them that they could not censor the news and changed the judgement.

It was a perfect example of what you were talking/writing about. The timing was so great, for I just finished reading part II of the article. I have read that you were cutting back on TV time, but I hope you get a chance to see that episode of Family Law.

Eurrat Saylor, Jr
Walkerton (Koontz Lake), IN

Thanks for writing the article on the Coming American Dictatorship. There are people out here that feel like you do but I fear there are woefully few. I find that when I talk to people about this subject I'm usually met with disinterest or that they look at me as if I have two heads. Thanks again for a great article.

Frank Toth
fjtoth@home.com

Sir: I think I have all your editions except for several of the very first, and I covered that with the first anthology. I'm a great fan. I believe the "Coming American Dictatorship" will be most likely the most important series done in ANY publication in the

past 20 years. Some way someone should make an effort to get it printed in the congressional record. (Rep Ron Paul?) I'm a writer—a "My Opinion" column in our local weekly for the past three years. My very best to you sir. Keep up the good work as long as you can, and cheers! Every politician should be required to take a written test on the Bill of Rights before being allowed to file for office.

John Parker, Junction, TX

Here's your 22 bucks. Thanks for a great rag. The American dictator articles are great. We can't be the only ones who see it. Keep up the great work. I was raised by depression era parents and really appreciate all your articles. Keep on with any constitution related articles. My wife and I both carry our little Constitution and Declaration of Independence book on us. We call it our gun carry permit. Unfortunately most of the world does not see it that way.

Don't change a thing. Years back when I found you guys I thought you were a God send and still do! If I were flat busted I'd steal the 22 bucks to keep getting your rag. Ha Ha. Seriously, I appreciate your work on our lifestyle and agree with you 100% politically. Thanks again.

P.S.: If you, Silveira and Mac get to the wilds of Morgan County, stop by. We'll have a few!!!

Jeff Bowman, Rockwood, TN

Massad Ayoob

Shortly after subscribing to Mother Earth News Magazine, I discovered your magazine and tried a back copy. In checking the departments I was surprised to find Massad Ayoob. Imagine that! A magazine that believes in the right to own a gun. A magazine that believes in the Constitution!

I immediately dropped MEN and subscribed to BHM. Now it's time to

renew. Please sign me up for another year. Thanks.

Ray Flaherty, Superior, WI

Alaska bound

I am a big fan, great information.

We want to live our "dream" in Alaska. Is there anyone out there that is willing to share their knowledge with me? I don't want to show up totally unprepared. Right now we live in northwest Montana so we know the basics on cold weather. Any information anyone could give us would be great!

I normally use the "Pony Express" but I do have an e-mail address.

Dena Garcia, Libby, MT
denagarcia@hotmail.com

African missionary

Thank you for the best magazine I subscribe to. I live off the grid and find it helpful and fun.

In response to the missionary from Africa, I too lived, was raised and spoke native languages in Africa, in Voinjama, Liberia. I too lived in mud houses and learned wonderful skills from natives. I saw them as elegant, tolerant, wise people, esp. victimized by missionaries who came not to raise their standards from harsh survival but to change their beliefs, the very thing that keep people going.

This, in my opinion, caused the ugly wars of today, because young men do not any longer evoke respect as they age; no one pays the wisdom of their elders any mind. Missionaries saw them as children of ham, son of Noah, doomed to serve 'white' people.

This kind of religious prejudice has doomed other countries too...India with caste systems based on religion, oh! many more. Think about how many people have been killed over religious sites and customs. None of it based in science.

I am increasingly horrified by the blatant entitlement proffered by missionaries; they really think they are better people than the 'savages.' Do

you think the Africans do not sense this?

C. Johnsen, Sheridan, WY

Applause

Just to let you know, I enjoy your magazine and pick it up every time I can in the store. I read the damn thing from front to back. On top of that when I'm on the internet I go to the web site (at least once a week) just to keep up on your new jottings. Your magazine is the closest thing I've found that aligns to my feeling of freedom and self-reliance. Thanks for showing that I'm not crazy. You must remember that the people that are viewed as crazy are actually the sane ones because they see just how bad things are. Thanks from Minnesota.

Steve Reichard, MN
sreichard@uswest.net

I found a copy of your magazine on our library free table. And folks, I'm impressed! After 30 years of self reliant, under the radar living, it takes a lot to impress me.

Here's my check. I can't wait to read more.

Pat Luckey, Commerce, TX

Love your mag. It's the only mag I get that I read cover to cover, keep up the good work. I would like to see something on underground homes like how to, and pros and cons of one. Thanks again.

C. E. Thorne, Columbus, IN

I really appreciate y'all's articles concerning our Constitution. They're an eye-opener for anyone with a brain. I noticed, however, that you no longer have a link to Claire Wolfe's articles. Why?

I have enjoyed your magazine for several years and will get another subscription when I can afford it. I hadn't realized it had run out.

My favorite articles are the ones by you, [Dave], John, Ayoob, and the irreverent joke page. Keep up the

good work. Just maybe we can turn our country back around! Thank you.

Matt
lmdavis70@hotmail.com

Claire Wolfe has stopped writing columns for a while. She'll get in touch when she's ready to write again. She is one of my favorite writers. — Dave

Hello, my name is Dale Foster and I just recently found out about your magazine (or should I say, Magazine), and wanted to "Thank you" for a wonderful job.

Per chance a friend of mine lent me a back issue of Backwoods Home and I was hooked! I read it cover to cover in one sitting and walked away smarter because of it. I was intrigued by how so much information can be found under the cover of one magazine! Even the articles I wasn't interested in were enjoyable.

I'm 27 and at the point in my life when I need to start thinking about the next 27 years. The older I get, the more I see the need for simplifying life. Over the past 2 or 3 years I've strived for doing just that, and feel to some extent I've succeeded. But I'm still thirsty for more information and I'm wanting to learn other ways to achieve that goal. Luckily, I've found a good source through your magazine.

I just read your article on Goodbye T.V., Hello constructive time. I couldn't agree with you more. Other than the occasional video rental or video game, my T.V. has been off for almost a year now and I can't express how peaceful it is and how much more time I've acquired. All my T.V. time is devoted to the computer and the internet. Trying to learn more about becoming self reliant and living the backwoods life, which seems ironic, using modern technology to learn about yesterday's techniques. I want to live a simpler, backwoods life, but stay "connected." Like yourself, I

work hard and enjoy certain civilized comforts.

Anyway, I wanted to pass along a word of praise for a good job on such a wholesome and well educated magazine. Thanks again, God Bless.

P.S. I just ordered your 12 issue special and look forward to the hours of reading them.

Dale Foster, Austin, TX

I read your magazine from cover to cover, like most of your readers. I used to read Mother Earth, but it seemed to me Mother Earth got off track. I enjoy your magazine and agree with the content of the magazine, especially your views and the views of your other writers of our political situation as it stands today. Thank God there are still some writers and editors that still are willing to write about how they feel and what they believe in. I was glad that you decided not to add a politically correct publication or, as you stated, a nonpolitical version of BHM. My thoughts are that if all your readers don't agree with your views they can skip those parts of the magazine, or do as I do and read some things they don't agree with just so they know the views of others. A person doesn't have to agree with everything they read; that I believe is called one's own opinion. That is part of what makes this country so great.

I am one of those lucky people who grew up the way you and your readers are trying to live today, or as a dream for the future. I'm not living in the country or as self-reliant as I would like at this time in my life but hope to again in the future. One of my sons is living the life and I always send him and his wife your magazine after I read it. They also love it and are living as much off the grid as possible, so your articles are very helpful. I will be helping them to build a shed from straw bales this summer. This shed will be their learning experience for a straw bale home in a

couple years. I have taught my daughter-in-law the art of canning and it is a pleasure to find young people who don't expect everything right now and for God's sake don't let it be any work.

As a single parent, when my sons were growing up, I taught them to use firearms for pleasure and to hunt. I'm now married to a man who also loves firearms and hunting and we take such great pleasure in teaching our grandchildren to shoot and hunt. Most of our grandchildren were given a .22 rifle the day they were born and have been handling them since they were old enough to walk. I certainly worry about the misconception of most people when it comes to firearms. I see the only way is to educate people, but sadly you can only educate people if they want to be educated.

I really enjoy reading Jackie's column, she gives good advice. I think I saw an advertisement for the Lehman's catalog in your magazine and that impressed me greatly. Lehman's is great even if you live on the grid.

Thanks for a great magazine.
Linda Beller, Spring Creek, NV

We had the pleasure of meeting at an August Preparedness Expo in Seattle in 1999. Your booth was the only one which didn't dabble in the usual conspiratorial foolishness with all the usual suspects. Since that time, I have transferred to Germany in Heidelberg until my retirement two years hence. We love the magazine and always read it practically cover to cover. We homeschooled four children so it is yet another adjunct to our curriculum. I, too, share your libertarian leanings but have completely written off the national LP as an effective vehicle for selling the ideas or having an impact. All your political rants are spot-on!

We would like to offer you and yours any hospitality we can offer if

you ever find yourself in Europe. The mandatory implementation of the Eurodollar in 2002 will significantly increase the value of the USD against it making tourism very attractive. God help them, but the Left is salivating at the opportunity to gain effective fascist control over the EU from Brussels for all their utopian dreams. It will only be a matter of time before they start selecting candidate members of the population to be tossed into blast furnaces in the finest collectivist tradition.

Please continue the great work and a fine magazine.

Bill Buppert
lilogram@MAIL.PJSNET.COM

I've been to Heidelberg, while in the Army. I always said I'd go back some day as a civilian. Perhaps on a trip to my Irish ancestral homeland, I'll pay you a visit. Thanks for the invite. — Dave

Hello, Mr. Duffy! I found your magazine on the internet a year or so ago. It's very enjoyable and educational as well. I enjoy the discussions and the articles written by people who obviously THINK. I am continually shocked at how many people do not do that for themselves these days—and really bright people at that. I'm also dismayed at the amount of ignorance these same people display at how their own government works (or doesn't).

I just saw two series run recently in the Washington Post on the D.C. police department. One dealt with the inability of the department to close murder cases (last year's closure rate was about 33%!), and the current series deals with the criminal incompetence of the department's personnel with firearms. For instance, they have averaged one accidental discharge a month for the past decade, and 19 cops have shot themselves or other cops during that time! And 75% of the cops shooting their guns in the

line of duty FAILED to meet their own department's minimum qualifying standards with their duty weapon! If the public only knew the truth about how dangerous a cop with a gun really is...

Here's the address to read the article(s) today: <http://www.washingtonpost.com>/

Anyway, one of the things I really like about your magazine is your attitude towards government. Individual people are responsible for their own actions or inactions, and when things get tough the answer is not to whine and cry to big government to bail one out of difficulty.

I currently live in rural Maine on 1.7 acres. My wife and I plan to buy even more acreage "further out." Maine is one state that is still mostly rural, and the natives up here have a fierce independent streak. The southern portion of Maine is becoming more urbanized, with all of the attendant problems and government control. The northern part of the state is still pretty free. Buy what you want, build what you want, do what you want. Don't pollute the water and everybody pretty much leaves you alone. If you install your woodstove wrong and burn your house down, that's your problem! No government agent will call.

Anyway, I'm writing this on the company dime, so it's back to the salt mines! Take care and best of luck with the future of your magazine.

Tom Strezniewski, Maine

What can one say. More kudos to all of you. I have found every issue to be thought provoking and loaded with practical information. Your editorial stance must also be commended. Although I'm not always in agreement, I'm bound to find the arguments based on calm logic and common sense.

The articles by John Silveira should be bound and presented for teaching freedom at schools. The method using

dialog between John, Dave and Mac is very effective. As well, I hope you continue your home schooling series. The ongoing contributions of Richard Blunt and Jackie Clay add to the value of your magazine. We as readers have come to feel we know your writers. I'd like to say more but would probably trip over myself with praise for your efforts.

My money is where my mouth is. I've ordered your last set of anthologies which gives me a complete set from the start. Keep up the good work.

Garry Tucker
gtucker@cancom.net

My husband and I have been reading your magazine for almost a year and absolutely love it. My husband always says that when it's time to renew our subscription we need to do whatever it takes, even sell our shoes to get the money for the subscription. Thanks again for great reading.

Kim Howe
Toms River, NJ

Coffee article

I worked for a coffee broker, so wanted to comment on the coffee article by Richard Blunt. Contrary to popular belief, the best coffee beans are sent away by exporters. The common people in coffee growing countries get what's left. Surprisingly, most people in coffee-growing countries drink inferior instant coffee. The only way to get good coffee beans is to know the growers and middlemen. I did enjoy a great cup of REAL coffee in the mountains of Honduras while on a missions trip. The pastor with whom we were working was a coffee grower, so we had home-roasted, fresh coffee (this was in March, so it was shortly after the harvest), sweetened with honey. It was the only time honey has ever tasted good in coffee, so I think it was made from the coffee blossoms themselves. The flavor was pretty bris, so they were

probably robustas. We snuck some green beans in through customs (shh! don't tell! my only act of smuggling!), but didn't have the benefit of your instructions, so the roasting wasn't good.

In defense of robusta beans: They are much maligned for lacking the complex flavor of Arabicas, but are often used (and burnt to a crisp!) in many espresso and dark roast blends because of their strong flavor. They're also cheaper, so they save the roasters and distributors some money. I came to enjoy them during my 3 years in Peru, though they weren't the highest quality.

One more comment on varietal beans. There was a scandal in San Francisco while I worked for the coffee broker. A distributor had replaced expensive Kona beans with cheaper beans from Panama and Costa Rica. The surprise was that the cheaper beans had the same flavor components as the Konas! That's why the distributor was so successful in his fraud. So personal taste is more important than location. Thanks for another great issue!

Tracey Croteau, Chattanooga, TN

Limited government

I just couldn't let the moment pass. Lee McGee put it so well in his letter in the Jan/Feb issue. Last June I had the opportunity to visit in Peru. My seat mate on a long bus ride was a native Peruvian physician. Because of the disputed election which had just been held there, we fell into a discussion of comparative political systems. Like the U.S., Peru has a Constitutional prohibition against any President serving more than two terms, but President Fujimori was able to change the constitution. All objections were rendered moot by a unilateral declaration of the Peruvian military generals and chiefs of police in support of Fujimori, regardless of the legality of his election.

My seat mate was an educated man, but the whole concept of a self-limiting government, with powers divided between the three branches, and with all the other checks and balances we take for granted, simply amazed him. The idea of a Federal government that does not need Uzi-toting police to enforce its legitimacy was novel enough. That such a government could actually exist, and remain in power for 200 years, he simply could not understand. Nor could he see the connection between our freedom and prosperity. In Peru, "legitimate" businesses are so drowned in red tape that they cannot exist without blatant corruption. It's far cheaper to pay a "squeeze" to some bureaucrat than to acquire all the required licenses and permits to do business legally. More than 90% of Peruvian businesses don't even try, but simply exist "under the table." My doctor friend learned a lot from our conversation, but I learned even more. I learned what a beautiful thing our Constitution is. Even our most ardent patriots undervalue it! It cannot be a coincidence that the only nation on earth with a self-limiting government is also the richest. Peru is a country twice the size of France, with a population under 30 million. It has been in existence for over 500 years, and has areas of unspoiled natural resources the size of Texas. By rights, Peru should be a prosperous country; instead, it is the poorest nation in South America.

Our Constitutional government has survived times of poverty. But can our wealth survive the loss of our limited government? We had better watch where we are going, or we could end up losing everything we have.

Don Fallick, Salt Lake City, UT

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CLOSING DATES: May 10 for the July/August issue; July 12 for the Sept/Oct issue; Sept 13 for the Nov/Dec issue

HEADINGS:	ACREAGE (Circle one)	ALTERNATIVE ENERGY	ELECTRIC VEHICLES	MISCELLANEOUS
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